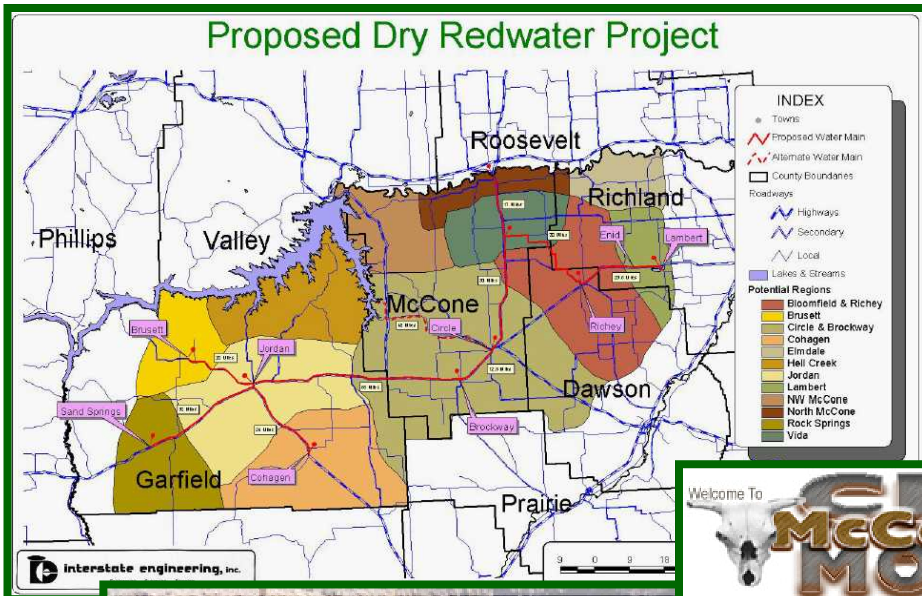
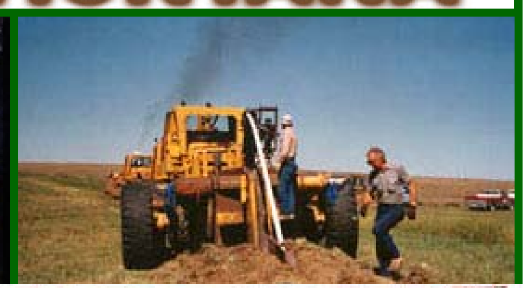
FINAL FEASIBILITY STUDY

DRY REDWATER REGIONAL WATER AUTHORITY
JUNE 2006





Submitted By:

interstate engineering, inc.

P.O. Box 648
Sidney, MT 59270
Ph: (406)433-5617; Fax: (406)433-5618
www.iengi.com

FEASIBILITY STUDY REPORT
FOR
DRY-REDWATER REGIONAL WATER AUTHORITY
DAWSON, GARFIELD, McCONE,
PRAIRIE AND RICHLAND COUNTY
S04-80

Mike McKeever, Chairman – Garfield County
Pat Eggebrecht, Vice-Chairman – McCone County
Roger Meyer, Secretary – Richland County Conservation District
Tod Kasten, Treasurer – McCone County Conservation District
Mayor John Whiteman – Richey Board Representative
Marco Unruh – Dawson County Conservation District
Baan Wille – Jordan
Dean Rogge – Garfield County Conservation District
Harry Helegeson – Circle

I, Brian Milne, hereby certify that this Feasibility Report was prepared by me or under my direct supervision. I further certify that I am a Registered Professional Engineer under the laws of the State of Montana.

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Date 7/3/06

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FIGURE INDEX

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ACRONYMS

A/AUM	ACRES / ANIMAL UNIT MONTH
ARM	ADMINISTRATIVE RULES OF MONTANA
AU	ANIMAL UNIT
BOR	BUREAU OF RECLAMATION
CEIC	CENSUS AND ECONOMIC INFORMATION CENTER
CMR-NWR	CHARLES M. RUSSELL NATIONAL WILDLIFE REFUGE
DEQ	DEPARTMENT OF ENVIRONMENTAL QUALITY
DNRC	DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
DRWA	DRY-REDWATER REGIONAL WATER AUTHORITY
EA	ENVIRONMENTAL ASSESSMENT
EDU	EQUIVALENT DWELLING UNIT
EIS	ENVIRONMENTAL IMPACT STATEMENT
EPA	ENVIRONMENTAL PROTECTION AGENCY
FONSI	FINDINGS OF NO SIGNIFICANT IMPACT
GPM	GALLONS PER MINUTE
GWR	GROUND WATER RULE
HHAs	HALOACETIC ACIDS
MCL	MAXIMUM CONTAMINANT LEVEL
MDT	MONTANA DEPARTMENT OF TRANSPORTATION
MEPA	MONTANA ENVIRONMENTAL POLICY ACT
MG/L	MILLIGRAMS PER LITER
MHI	MEDIAN HOUSEHOLD INCOME
MR&I	MUNICIPAL, RURAL AND INDUSTRIAL WATER SUPPLY PROGRAM
NEPA	NATIONAL ENVIRONMENTAL POLICY ACT
NSDWR	NATIONAL SECONDARY DRINKING WATER REGULATIONS
O&M	OPERATION AND MAINTENANCE
PACL	POLYALUMINUM CHLORIDE

ACRONYMS continued

PAHS	ALUM-POLYALUMINUM HYDROXYL SULFATE
PEMA	NATIONAL WETLAND INVENTORY SYMBOL FOR A SEASONALLY FLOODED BASIN
PEMC	NATIONAL WETLAND INVENTORY SYMBOL FOR A SHALLOW SLOUGH
PPB	PARTS PER BILLION
RUS	RURAL UTILITY SERVICE
SHPO	STATE HISTORICAL PRESERVATION OFFICE
SWR	SURFACE WATER RULE
TDS	TOTAL DISSOLVED SOLIDS
TSEP	TREASURE STATE ENDOWMENT PROGRAM
TTHMs	TOTAL TRIHALOMETHANES
USACOE	UNITED STATES ARMY CORP OR ENGINEERS
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE
WTP	WATER TREATMENT PLANT

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A Agreement forming Dry Redwater Regional Water Authority
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B Area Well Quality Information

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D User Sign-up Sheet Summary

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I Computer Modeling Information and Cost Estimates

J North Richland County / West Glendive Information

i. EXECUTIVE SUMMARY & CONCLUSION

PURPOSE

A feasibility study is the first step in developing a regional water system. In this study a service area (the counties of Garfield, McCone, Dawson and Richland) was developed and a study area (Figure i.1) was evaluated. This evaluation included the number of potential water users, the potential locations, size and type of a water treatment facility, a potential waterline network, the anticipated operation and maintenance costs and a proposed water rate structure. The information contained in the feasibility study has the necessary detail to determine if the project can advance to the next level, which is gaining authorization from Congress. The formation of a regional water authority is necessary to secure Federal authorization.

A steering committee working with the McCone County Conservation District did the ground work to form a water authority. The name of the Authority is the Dry-Redwater Regional Water Authority (DRWA), which includes the following initial member entities: Town of Jordan, Town of Richey, Town of Circle, Dawson County Conservation District, Richland County Conservation District, McCone Conservation District, Garfield County Conservation District, McCone County and Garfield County. This entity was formed December 12, 2005. The table below shows the DRWA Board Members as of May 10, 2006.

Mike McKeever, Chairman	Garfield County
Pat Eggebrecht, Vice Chairman	McCone County
Roger Meyer, Secretary	Richland County Conservation District
Tod Kasten, Treasurer	McCone County Conservation District
Mayor John Whiteman	Richey Board Representative
Marco Unruh	Dawson County Conservation District
Baan Wille	Jordan
Dean Rogge	Garfield County Conservation District
Harry Helegeson	Circle

The general purpose for which the DRWA was formed is to own and operate a regional water system that will provide a high quality water supply to the users in the service area. It is the long term solution to provide good quality and quantity of household and livestock water to the service area. The DRWA is responsible for the financial administration of the system, operation and maintenance of the billing and collection and all other duties and or items required for and in the operation of a regional water authority in the State of Montana.

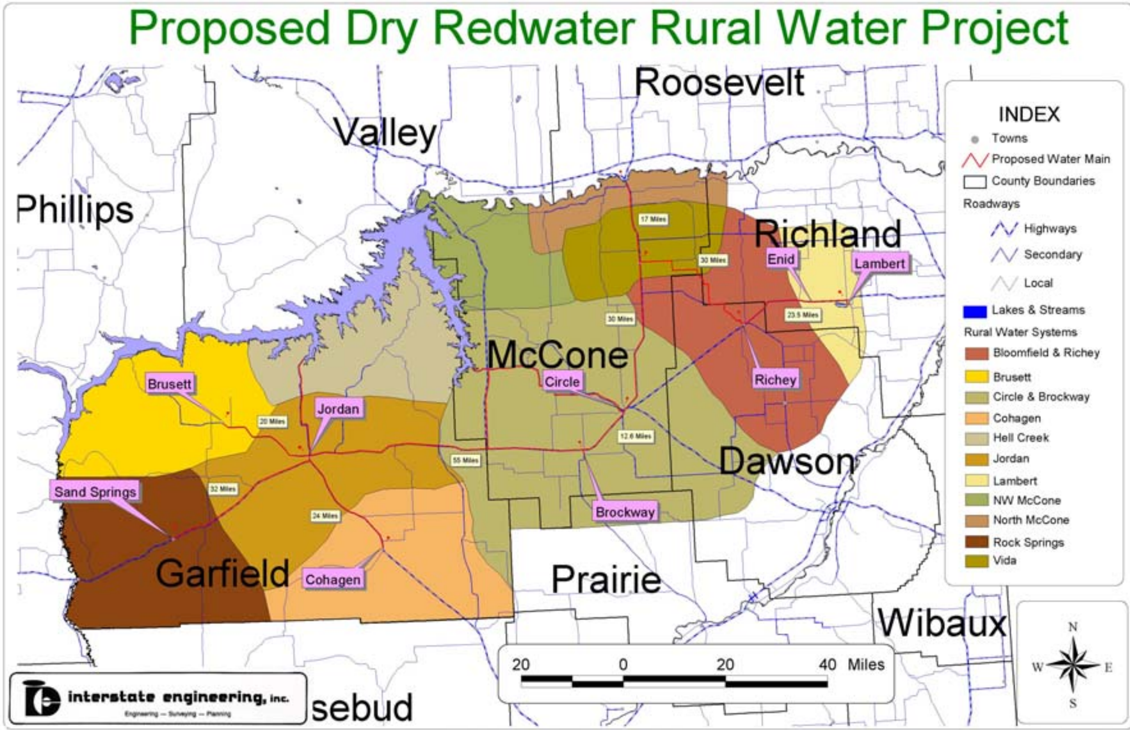

Figure i.1
DRWA Study Area

NEED FOR THE PROJECT

The rural residents in the proposed project area currently obtain their water, in the majority of instances, from private wells drilled into shallow aquifers, gravel pockets or deep confined aquifers. Some rural residents are hauling water either because their well water is undrinkable or there is not a sufficient quantity to be usable. Many rural residents do report water quality and/or quantity problems, which is evidenced by the chart of private well water quality found in Chapter 2, Table 2.3.2 of this study. The majority of the proposed communities to be served are currently operating their own municipal water systems; all of the communities are using wells as a source of water. Three communities must treat their water because of high levels of fluoride which is a health hazard and a regulated contaminant. The fourth community – Jordan – does not treat its water but it is high in sodium and total dissolved solids which are not currently regulated, but has detrimental effects on those drinking it.

Based upon preliminary review of the water quality in the wells of rural users in the proposed service area it indicated that the majority of them do not have access to a quality of water needed for a healthy existence. Table 2.3.2 shows a sampling of water well quality is found in Chapter 2 along with tables showing the National Drinking Water Standards. One of the wells on that list serves Garfield County School District No. 15 and it shows that the sodium level is 447 ppm which exceeds

the recommended level of 250 ppm, the fluoride is 3.35 ppm which exceeds the recommended level of 2 ppm and it has 1049 ppm of total dissolved solids which is over twice the recommended level of 500 ppm. This well and the other private wells are not regulated by National Drinking Water Standards but the detrimental effects of the water on their users are not any less because they are not regulated. The treatment of water in a private well is costly and sometimes complicated depending on what is in the water. A regional rural water system will allow the rural user to have access to a reliable, safe, high quality water supply. The public water systems in the service area are regulated by Drinking Water Standards and must treat the water they provide to their user to these standards. The use of a membrane type water treatment facility (reverse osmosis or nano-filtration) are not typical systems found in smaller towns, but due to the limited alternatives to remove the regulated contaminates (fluoride) Circle, Richey and Lambert were forced to use this energy intensive system. The requirements for safe drinking water are getting more stringent every year and these increased regulations equal increased costs to all public water systems. A small system that currently treats their water such as Circle, Richey and Lambert will be greatly impacted financially for even minor modifications needed to meet new drinking water treatment standards. These costs will be in treatment, distribution and operator certification costs. The Town of Jordan currently does not treat its ground water source but does provide disinfection by means of chlorination. The Town of Jordan, like other public drinking water systems, must publish an annual drinking water report and following is an excerpt from the latest report: *"We're pleased to report that our drinking water is safe and meets federal and state requirements. However, as many of you know, although our water is labeled as safe to drink under the Safe Drinking Water Act, some of the unregulated parameters affect the taste and may affect the health of a limited population. The concerns are sodium and the total dissolved solids in the water. The sodium level is high enough that people with high blood pressure may want to consider a separate source of drinking water. The total dissolved solids are high enough to have a laxative effect on people that have not become conditioned to the water. We are aware of these problems with our source of drinking water, but have been unable to find a solution that is financially feasible."* The drinking water standards for sodium and total dissolved solids will be addressed in future regulations and the Town of Jordan will need to address these regulation changes and the costs that will be associated with meeting those new regulations. By belonging to a regional water system these small systems will be part of a larger user base, so future improvements will not have as great of financial impact to the individual user. In the proposed regional water system there is one source of water treatment which will replace 3 existing water treatment systems. This will reduce the number of certified operators needed and will reduce a duplication of salary costs currently occurring with multiple treatment facilities. A regional water system also mitigates the potential negative impacts of migration from one small community. For example, if 15 users leave Richey that is 10% of their user base, but if Richey joins the DRWA project, and they still lose 15 users it is less than 1% of the user base.

SELECTED ALTERNATIVE

ALTERNATIVE B – BIG DRY ARM (NELSON CREEK, ROCK CREEK OR BEAR CREEK) WATER TREATMENT FACILITY

See Figure i.2 for the service area of the DRWA.

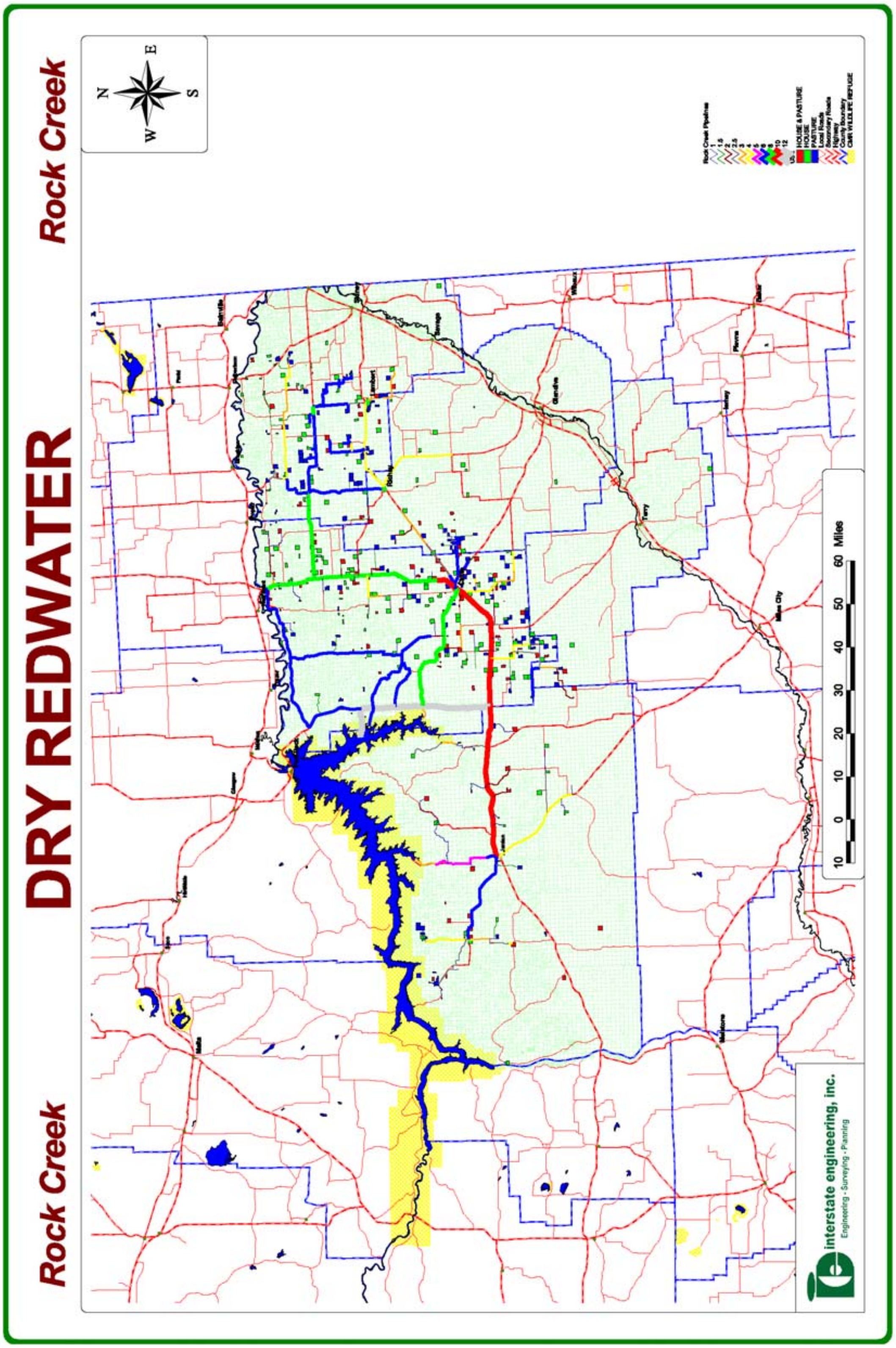

Figure i.2
Selected Alternative: Areas Served

The opinion of probable costs of the selected alternate is $82,148,000 for the complete build out of the study area.

Total Equivalent Dwelling Units (EDU) currently in the study area is 1,849.
Capital cost per EDU currently in the study area is $44,430.

The O & M for the selected alternate is estimated to be: $484,500 for operation of the water treatment facility and booster station operation and $170,000 for the maintenance of the rural pipeline.

A potential rate schedule and cost of water is (a detail of these rates are found in Chapter 11):

Base Rate (All Users)	$26.50 / month
Water Treatment / Booster Station (All Users)	$2.05 / 1000
Pipeline Maintenance (Rural Users)	$1.45 / 1000
Existing Water System Maintenance (Community Users)	*

* This fee will be set by the individual community based on their operating budget. The study will use the same rate for illustration purposes.

Example rates for 8000 and 5000 gallons per month.

		8,000	***5,000***
Rural / City User	Base Rate (minimal)	$26.50	$26.50
	Water Treatment/Booster	$16.40	$10.25
	Pipeline Maintenance or Water Maintenance Fee	$11.60	$7.25
	Total Monthly Bill:	***$54.50***	***$44.00***

Pasture Tap Rates for 100 head of livestock (48,000 gallons/month, based on 16 gal / 1 day / head))

Base Rate (minimal)	$26.50
Water Treatment/Booster	$98.40
Pipeline Maintenance	$69.60
Total Monthly Bill per 100 head:	***$194.50***

FINANCIAL

The funding being considered for the DRWA is a 75% grant from the Federal Government under Municipal, Rural and Industrial Water Supply Program (MR & I Program) or a direct Federal appropriation. The remaining 25% would be pursued in the form of a low interest loan from RUS (Rural Utility Service) for 12½% and a 12½% grant from the Treasure State Endowment Regional Water Program. The feasibility report indicated that without the grant component of the financial package this system would not be affordable.

CHAPTER 1
INTRODUCTION

1.1 PURPOSE

The Dry-Redwater Water Authority (DRWA) began in 2003 as a steering committee working in cooperation with the McCone County Conservation District office, to explore the possible feasibility of constructing a regional rural water system to serve both rural users and communities located in Garfield and McCone Counties.

The steering committee was to:

(1) Work together towards identifying feasible water supplies and distribution systems.
(2) Provide prudent management of all available funding to be used in the feasibility phase and future phases required to fully develop a regional water system.
(3) Set aside consideration of system boundaries between member systems whenever and wherever necessary in order to accomplish identified goals.

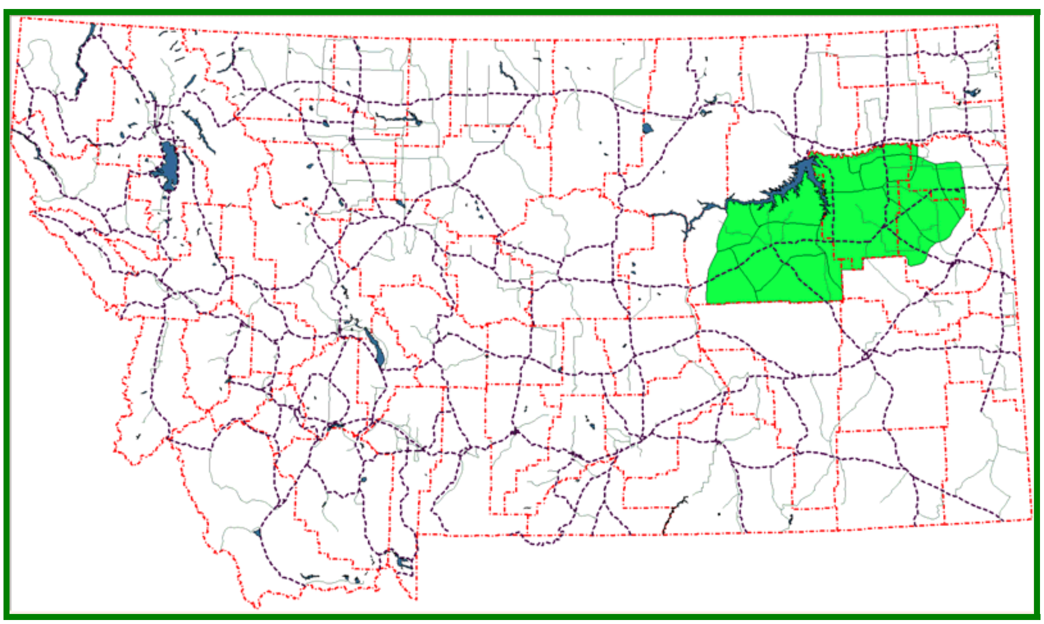

Figure 1.1.1
Study Area's Relative Location

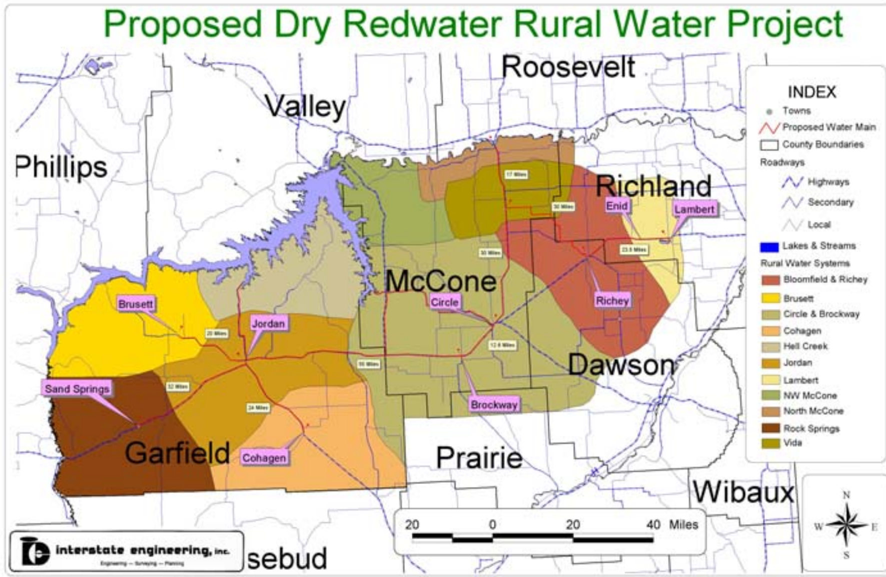

Figure 1.1.2
Original Study Boundary

The DRWA will strive to keep costs affordable to the users by utilizing existing facilities to the fullest extent possible. The DRWA will review and assess existing facilities in the area, and will either use existing member services or contract with non-members to provide those services to all customers rather than relying on duplication of storage and/or distribution facilities in a given area. These potential cost savings are not included in the feasibility level cost estimates. The cost savings for reuse of the existing facilities will be determined in the final design phase of the project.

The reuse of existing facilities could result in a more efficient development of operations, and thus a more affordable rate to all customers. The regional water supply is intended to be used primarily for potable water consumption for residential and commercial entities, including the rural user that may utilize the water for livestock operations if other resources are not available.

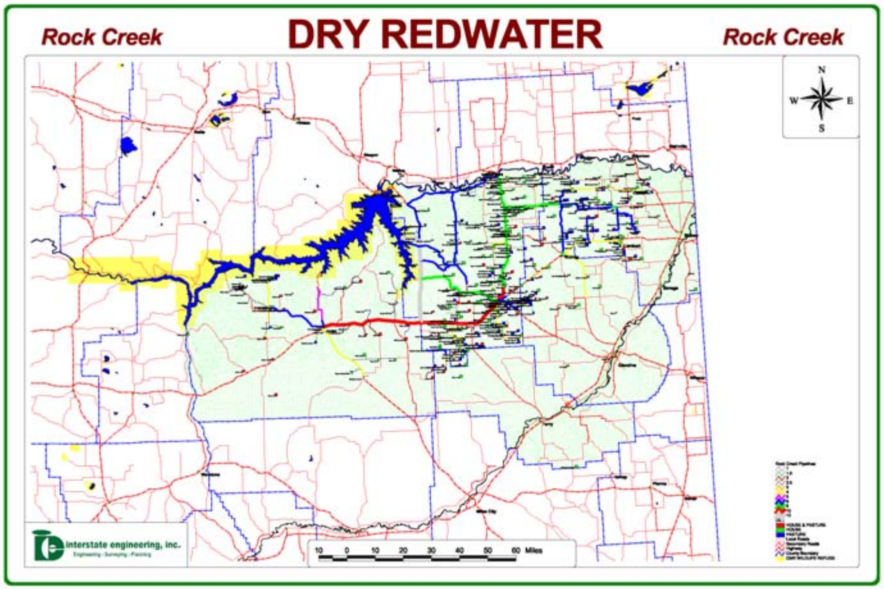

Figure 1.1.3
Signed Up Users Location Map

1.2 NEED FOR THE PROJECT

The rural residents in the proposed project area currently obtain their water, in the majority of instances, from private wells drilled into shallow aquifers, gravel pockets or deep confined aquifers. Some rural residents are hauling water either because their well water is undrinkable or there is not a sufficient quantity to be usable. Many rural residents do report water quality and/or quantity problems, which is evidenced by the chart of private well water quality found in Chapter 2 of the study. The majority of the proposed communities to be served are currently operating their own municipal water systems; all of the communities are using wells as a source of water. Three communities must treat their water because of high levels of fluoride which is a health hazard and a regulated contaminant. The fourth community – Jordan – does not treat its water but it is high in sodium and total dissolved solids which are not currently regulated, but has detrimental effects on those drinking it.

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Town of Circle

The Town of Circle has a municipal water distribution system which consists of 2 deep (±1,500 ft) water wells, an elevated 50,000 gallon water storage tank, a 250,000 gallon on-ground water storage tank and a reverse osmosis water treatment plant with a 50,000 gallon clearwell. The Town has experienced bacterial growth in their wells that has required extensive rehabilitation work and replacement of one well. This well problem is chronic and is on going. The raw water supply is over the MCL for

fluoride and above the secondary limit for sodium that is why the Town of Circle utilizes an energy intensive reverse osmosis treatment process. If the current treatment process has mechanical problems the Town would be forced to put water into the distribution system that is a documented health hazard. The Town of Circle will benefit in the long term by connecting to the DRWA. The uncertainty of the life of their wells, the cost to replace a well and the cost to treat the water are all items that strengthen their commitment to this project.

Town of Jordan

The Town of Jordan has a municipal water distribution system which consists of 2 water wells and a 200,000 gallon on-ground water storage reservoir. There is no treatment of the water but it is disinfected by being chlorinated. The quality of the water exceeds many of the secondary limits, such as sodium and total dissolved solids, of the clean water act. The potential for increased regulation of the groundwater rule (GWR) and disinfection by products rule would cause an additional cost to each user in Jordan. The Town of Jordan will benefit from the DRWA project by having a water supply that is treated to the most current water quality standards and delivered at a consistent volume and pressure.

Town of Richey

The Town of Richey has a municipal water system that consists of two deep water wells (± 1400 ft), an on-ground 40,000 gallon on-ground concrete water storage reservoir and a reverse osmosis water treatment facility. The Town water storage reservoir is over 40 years old and has been a maintenance issue for the past two years. The water source for the Town exceeds the MCL for fluoride and the secondary limits for sodium that is why the Town of Richey utilizes an energy intensive reverse osmosis treatment process. If the current treatment process has mechanical problems the Town would be forced to put water into the distribution system that is a documented health hazard. The water treatment facility reduces the levels of each contaminant to below the limits. The Town of Richey will benefit from inclusion in the DRWA project since its current raw water source is in violation of the drinking water standards if not treated and the current system has a fairly high cost to operate when compared with conventional treatment. The replacement costs of membranes and increased electrical costs in the future will also make connecting to the regional system more economical.

Lambert County Water and Sewer District

Lambert County Water and Sewer District has a central water distribution system. This unincorporated town has two deep water wells (± 1,200 ft), a 50,000 gallon on-ground steel water storage tank and a nano-filtration (membrane) water treatment facility. The water supply exceeds the MCL for fluoride and exceeds the secondary limit for sodium that is why the District utilizes an energy intensive nano-filtration treatment process. If the current treatment process has mechanical problems the

Town would be forced to put water into the distribution system that is a documented health hazard. The District will benefit from connection to the DRWA for the same reasons as Circle and Richey.

New Rural Users– New users would include rural residents who have not had the opportunity to be connected to a high quality treated source of water as provided by a regional water system. These residents use individual wells for domestic and agricultural needs, haul water from other sources or purchase bottled water for drinking purposes. The water quality varies greatly throughout the project area but generally has levels exceeding the U.S. EPA Secondary Health Standards with high levels of total dissolved solids, hardness, sulfates, sodium, iron, manganese and areas of high fluoride. Chapter 4 has a table showing the actual water quality of wells being used. The majority of these wells are constructed in glacial till materials typical of the project area, resulting in wells which have varying abilities to provide a sufficient quantity and adequate quality of water supply. The cost to install a new water well has been determined, based on information provided by NRCS, to be over $90 / month when you factor in the replacement cost of the various components of a well system. The box below shows how this cost was determined:

Drill and case well: $35.00/ft average depth 200-250 ft Cost: $7,000-$8,750
If a well lasts 15 years the monthly cost is $39.00 to 48.00 per month.
Pump and Motor: $1,000.00 If a pump lasts 5 years the monthly cost is $16.70.
Control pit/pressure tank: $2,800 with a 15 years life has a monthly cost of $15.60.
Annual stock well electrical rate is $240.00 per year or $20.00/month before electrical use.
The cost to run electricity to a new well site is $17,160.00/mile or $3.25/ft. This cost was provided by McCone Electric.
For a new well that already has electric service the monthly costs before any water is pumped is $91.30 to $100.30.

1.3 AUTHORIZATION AND FUNDING

This feasibility study to investigate specific aspects of a regional water system was completed in 2006. The 2003 Montana Legislature authorized a $30,000 Department of Natural Resources and Conservations (DNRC) Grant to fund a portion the study with $40,000 being provided by an Economic Development Grant from the Federal Government, $15,000 from the Montana Department of Commerce and $10,000 from local donations. The McCone Conservation District was the original sponsoring agent that received and disbursed these funds.

1.4 PROJECT SERVICE AREA

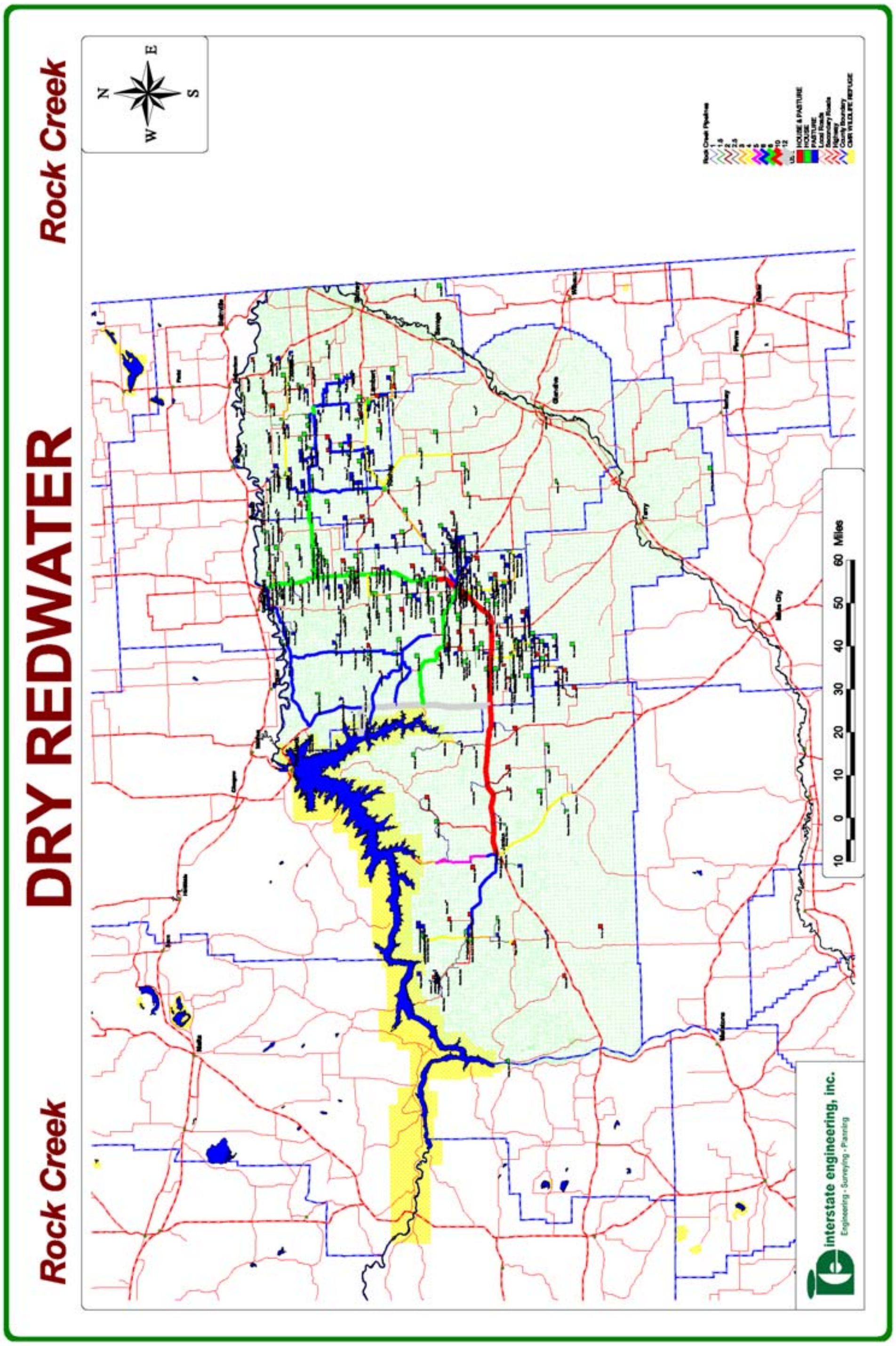


Figure 1.4.1
Project Service Area

1.5 BACKGROUND

The first steering committee to discuss the potential for a regional water system was held October 1, 2002. The Dry-Redwater Rural Water System steering committee, held its first community meetings in 2005 to provide the public preliminary information about the proposed system. Meetings were well attended in Jordan, Circle and Vida with about 150 community residents from Garfield and McCone County attending. The need for quality water in a sufficient quantity by those in attendance was evident by the questions. The paragraphs below are examples of the information provided by the steering committee during the initial public meeting.

What is the Dry-Redwater Rural Water System? *It is a potential long term solution to provide good quality and quantity of household and livestock water to the area. The study area is proposed to include as many of the residents and towns in McCone and Garfield Counties and the areas surrounding Richey and Lambert. The potential service area is the area covered by Dawson, Garfield, Richland and McCone counties. The system would consist of a buried pipeline network. The water intake pipe would be located somewhere in the Big Dry Arm of Fort Peck Lake. Water from the intake would pass through a water treatment plant and then be pumped through a network of underground water lines to the users. The lines would probably utilize utility or county road right-of-ways. The water would be treated as per state and federal guidelines. A network of pumping stations and storage tanks would insure reliability and flexibility to the system.*

The water can be used in residential, commercial, household and livestock watering systems. These rural water systems are very possible. There are many of these rural water systems designed and operating in our neighboring states. Financially, they are feasible because the federal and state governments have always used tax money to help pay for the majority of the costs of these water systems throughout the United States.

The rural water system is very similar to the cooperative efforts that brought electricity and telephones to rural America. Almost all of North Dakota and South Dakota are served by rural water systems.

After the Circle meeting, an area resident commented, “I am sure that when a group of people sat down at a table some years ago, and started to discuss how they were going to get electricity or telephone to the rural areas, they had the same questions and concerns we heard at the meeting today. Well look at where we are now, through a cooperative effort, electrical and telephone service was feasible. We need to look at this rural water project in the same way, as a utility.”

1.6 PROJECT SPONSORS

The McCone County Conservation District was the original sponsor for the DNRC grant. There was a formal Board of Directors of the regional water authority formed

in December of 2005. The Dry-Redwater Regional Water Authority is registered with office of the Secretary of State of Montana as a Regional Water Authority, an official political subdivision. The DRWA is a cooperative effort between Dawson, Garfield, McCone, Prairie and Richland Counties. By-Laws & Rules were written to augment and clarify the Agreement Forming the Dry-Redwater Regional Water Authority that was signed by all of the Initial Member Entities and recorded in Dawson County, June 3, 2005 under document #425633; McCone County, June 2, 2005, under document #182385: Richland County, June 3, 2005, under document #530717 and Garfield County, June 7, 2005, under document #180448. Copies of these documents are found in the appendix.

1.7 USER INTEREST

According to Ralph Pakaluk of the North Central Water Consortium in North Dakota, the goal of the government agencies that fund all rural water projects is to see these projects as commonplace in the state as Rural Electricity and Rural Telephone. They have urged cooperative efforts between communities in order to fill the voids that exist. The DRWA shares the same goal and will cooperate with the funding agencies for the benefit of the residents throughout the respective distribution areas of the consortium.

Approximately 10 public meetings have been held, several mailings to a majority of the rural residents were completed and numerous personal contacts have been made throughout the proposed project area.

As of May 10, 2006 over 902 sign-ups have been received. The communities of Circle, Jordan, Richey and Lambert have also agreed to participate in the study. The total number of sign-ups is 1,849 representing over 5,000 individuals. Table 1.7.1 provides a summary of the sign-ups.

Table 1.7.1
(As of May 10, 2006)

	Richland	McCone	Prairie	Garfield	Dawson	TOTAL
Houses	97	326	2	82	35	542
Pasture Taps	87	191	12	52	18	360
Total Rural:	184	517	14	134	53	902
Jordan Users				250		250
Circle Users		360				360
Richey Users					147	147
Lambert Users	80					80
Total City Users:	80	360	0	250	147	837
Cabin Users		60		50		110
TOTAL:	**264**	**937**	**14**	**434**	**200**	**1849**

1.8 CURRENT WATER USAGE

The water usage by each community is shown in Table 1.1 and is calculated from individual survey forms, and community usage records.

Table 1.8.1 – ESTIMATED WATER USAGE BY COMMUNITY

Community	Million Gallons per Year
Circle	57
Jordan	30
Richey	14
Lambert	11
TOTAL ANNUAL USE	112

1.9 CURRENT SITUATION

The list of towns or water districts that have expressed intentions to purchase water from the DRWA include:

1. Circle
2. Jordan
3. Richey
4. Lambert County Sewer and Water District

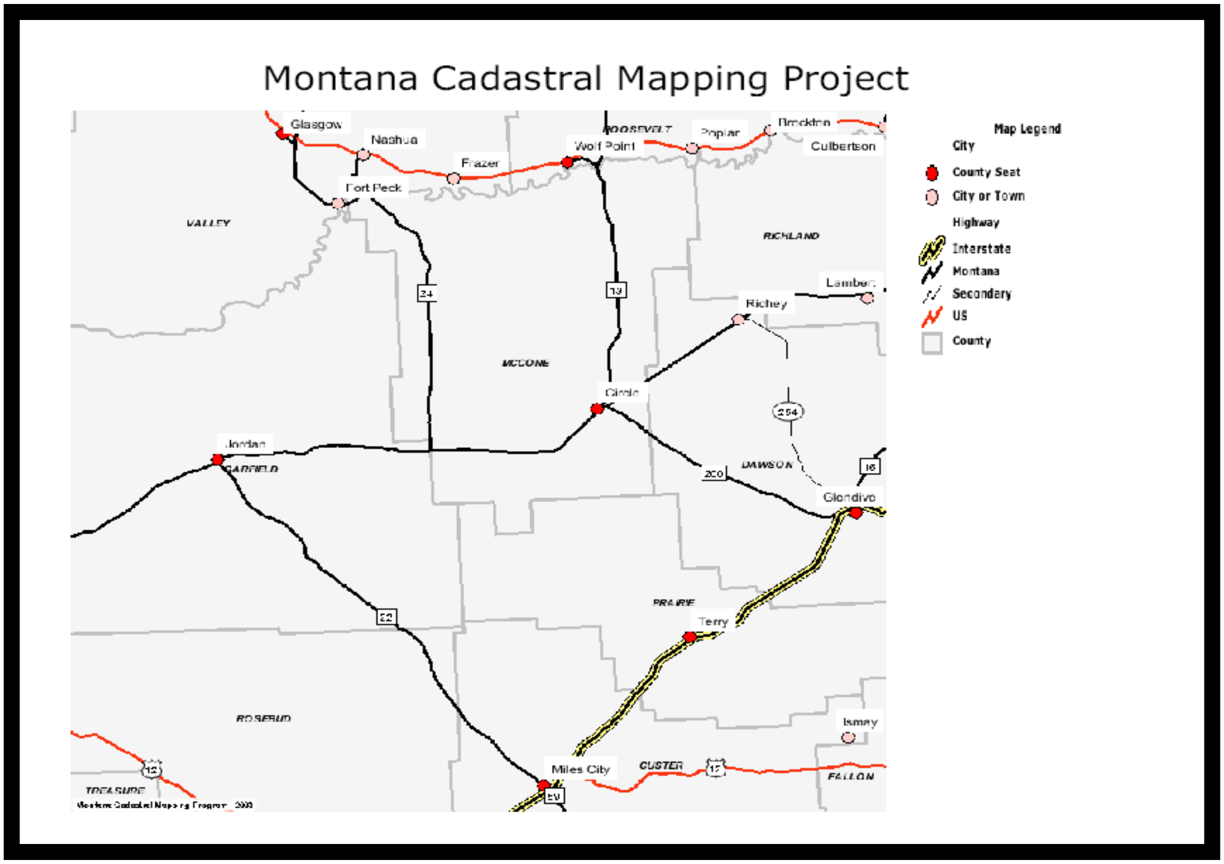
1.10 ECONOMIC, SOCIAL AND DEMOGRAPHIC DATA

Many rural areas face economic and community development issues of a very different character than communities whose needs are mainly defined by poverty. Often, the defining features are geographic isolation of communities separated by long distances, absence of large metropolitan centers, low-density settlement, out migration, and economic upheaval or economic distress.

The local economy is considered agricultural for the majority of the project area. There is planning and permitting going on in western McCone County to develop a coal mine and power generation facility. Because of this energy producing area, the Circle and Jordan areas could experience significant residential growth during the construction phase of this project and a long term increase based on the jobs created to operate and support the facility.

According to the 2000 census, the population of the project area was approximately 16,500. The projected population for the area in 2015 is 17,200. The median household income ranges from $25,451 to $32,110 per year with an average of $28,920, as identified in the 2000 census date, but varies widely from county to county. A regional rural water system will spur economic development in the DRWA service area first by creating 50 to 200 construction jobs during the installation of the system and then by allowing access to a high quality reliable water source through a 4 county region. This availability of water will allow relocation or redistribution of the population base, development of support industries for the agricultural and energy development community.

Figure 1.10.1
Area Roadways



The highway system serving the project area includes a combination of US and state highways and county roads (paved and gravel). There is one railroad passing through the project area, which is Burlington Northern Sante Fe. This line is currently not in operational condition and is not currently used. The railroad is evaluating this track segment in regards to the potential for the coal development in McCone County. This information comes from newspaper articles as no official statement has been provided by BNSF. Additional transportation is provided by small airports serving the Circle, Richey and Jordan.

Public school districts with Kindergarten through Grade 12 classes are found in the 4 communities in the project area. Some districts are supported by the individual communities and surrounding area. Facilities providing medical care for the area residents include the McCone County Health Center (CAH) and Garfield County Health Center (CAH).

CHAPTER 2
PROJECT AREA RESOURCES

2.1 GENERAL DESCRIPTION

The project area is located in North Eastern Montana. The Missouri River flows along the northern border of the area. There are about approximately 9,400 square miles within the study area.

The potential service area's population is approximately 21,800, which includes the towns of Circle, Richey, Jordan and the unincorporated Town of Lambert. The cities of Sidney (4,774) and Glendive (4,729) are in the potential service area populations but are not in the study area so the study area population is approximately 12,300.

The project area crops consist of wheat, barley and oats on dryland farms, as well as some alternate crops. Irrigated crops are grown on low-lying areas adjacent to the Missouri River, and those are mostly alfalfa and wheat. Agricultural livestock production within the project area consists of cattle, sheep and some swine.

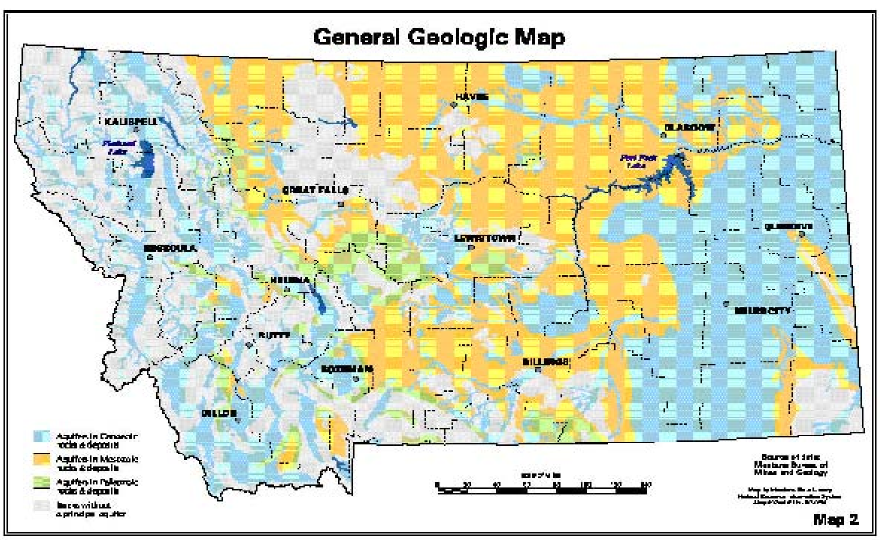


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Figure 2.1.1
General Geological Map of Montana

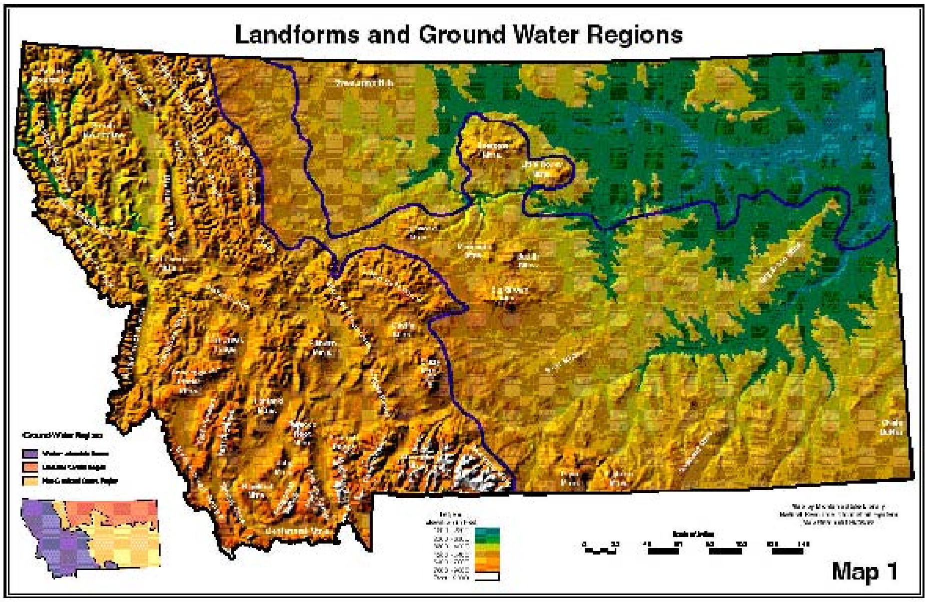

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Figure 2.1.2
Land Forms and Groundwater Resources of Montana

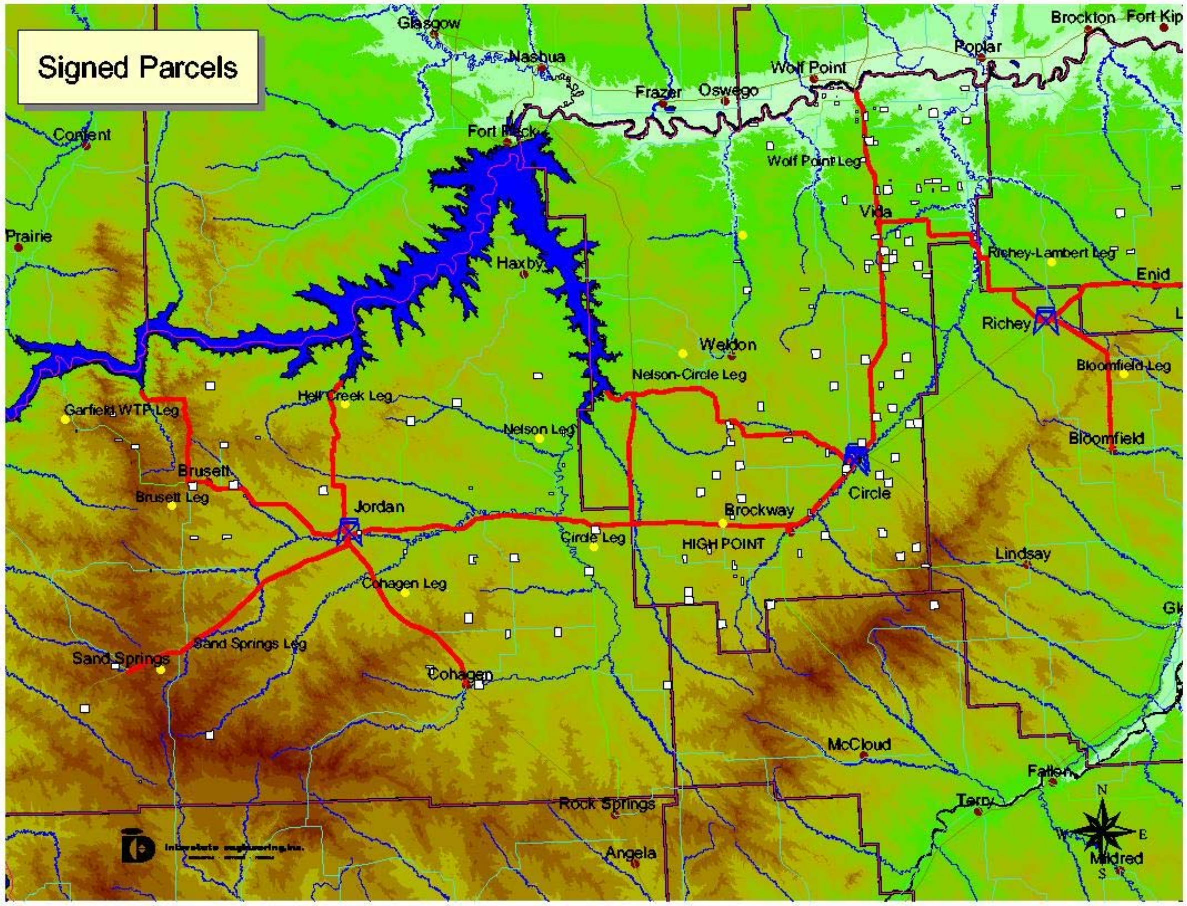


Figure 2.1.3
Project Area – Relief Map

2.2 SURFACE WATER

Fort Peck Lake and the Missouri River bound the north side of DRWA study and service areas. Fort Peck Lake is a manmade reservoir created by construction of the Fort Peck Dam. The Dam is operated by the U.S. Army Corps of Engineers as a flood control structure on the Missouri River. There are no other major bodies of surface water through out the planning area. There are however many small bodies of water including small dams and intermittent creeks, such as the Redwater River, Nelson Creek, etc.) through out the study and service areas.

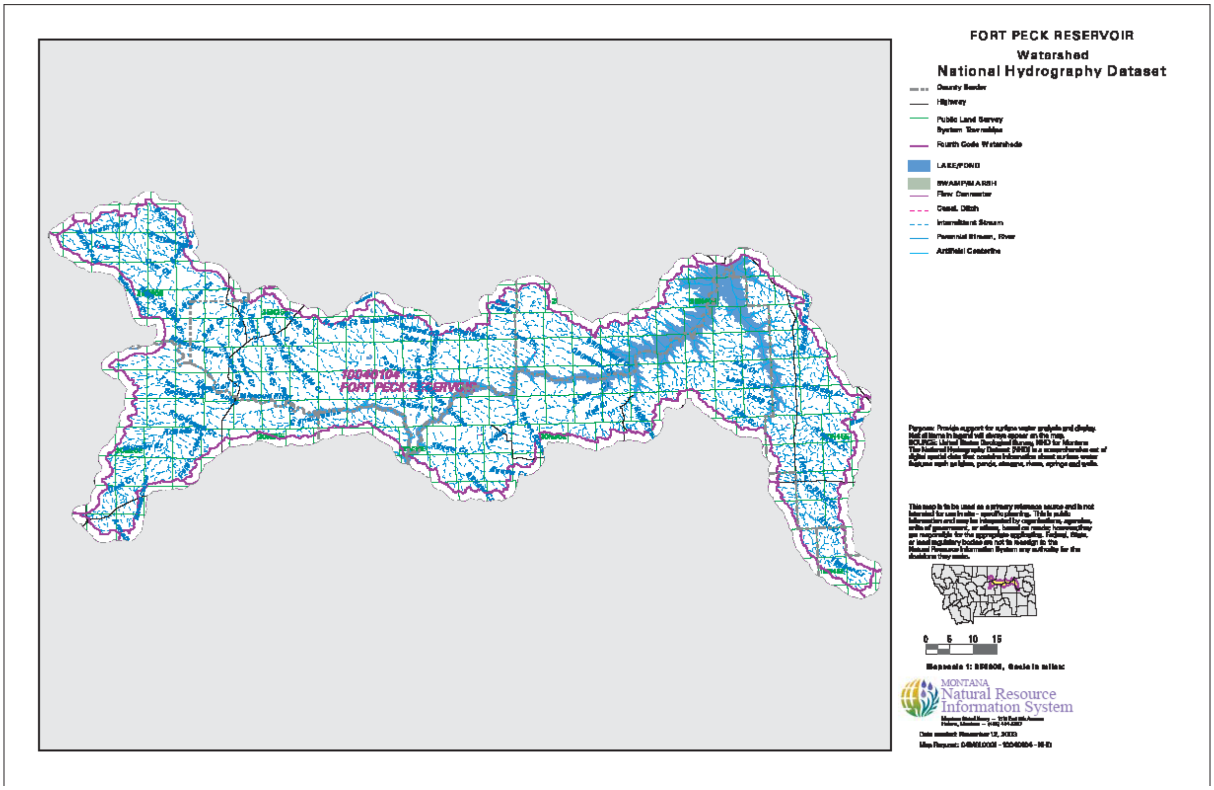


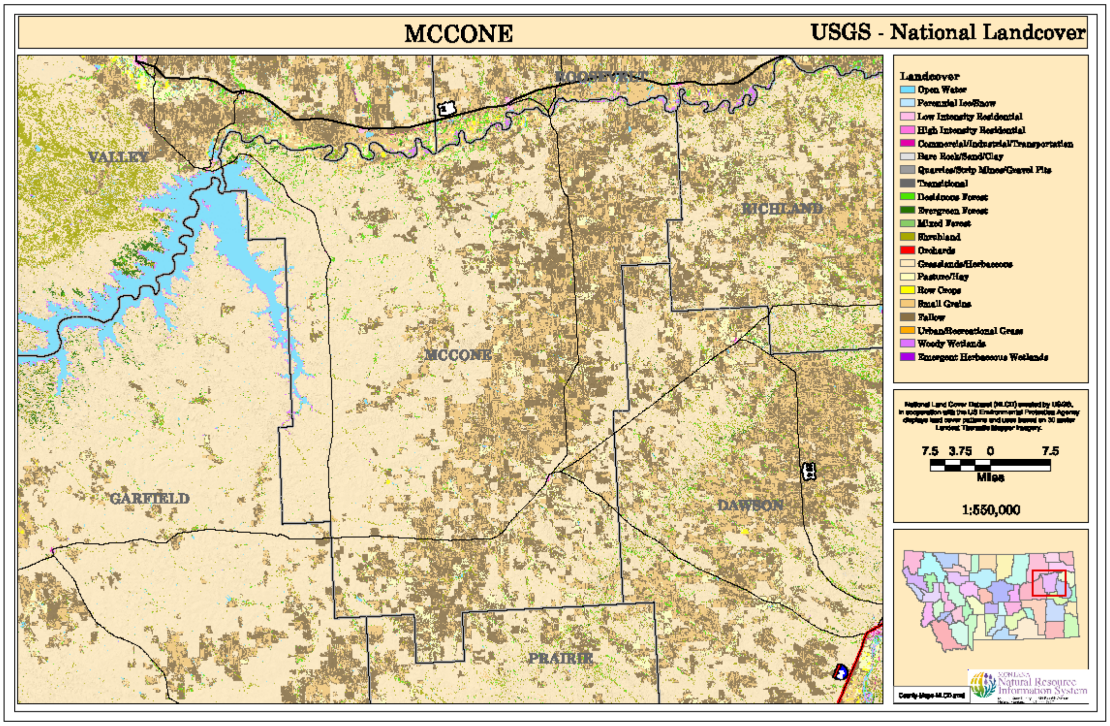
Figure 2.2.1
Project Area Major Surface Water Resources

2.3 GROUND WATER

2.3.1 General Ground Water Data

There are two main deep aquifers within the project area, the Fox Hills Sandstone and Hell Creek Formations of the Late Cretaceous age above the Pierre Shale bedrock units.

Glacial-drift deposits of Quaternary age are scattered though out the area. These Glacial-drift deposits are considered to contain both better quality and greater quantities of water than the deep artesian formations. These deposits include impermeable glacial till and water-yielding glacifluvial materials such as sand, gravel, and silt.



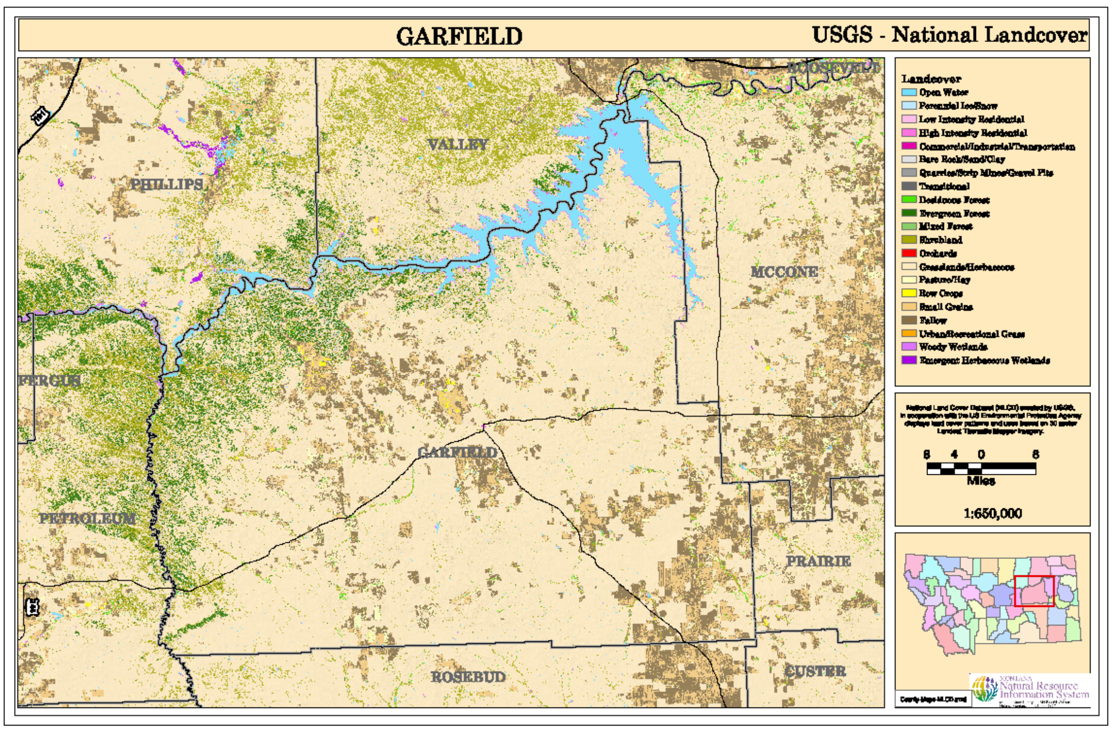


Figure 2.3.1
Project Area Land Cover

2.3.2 Ground Water Quality

In both McCone and Garfield Counties, water quality varies more with well location than with well depth. One hundred seventy-nine (179) well logs were reviewed for McCone County and fifty-one (51) well logs were reviewed for Garfield County. Test well and petroleum well logs were on deep wells, and were excluded from the review.

Water analysis should be done on all wells to be sure that the water meets water quality standards. The private wells that service the rural user can be tested to note the quality but very rarely will a rural user go to the expense of treating water to the water quality standards set by the regulation agencies. Table 2.3.1 below outlines the recommended limits of key water constituents. Table 2.3.2 is a summary of actual well quality listing of a sample of over 980 domestic wells in the study area. The boxes that are highlighted indicate constituents that meet suggested water quality limits. You will note that no well meets more than two of the five listed constituents.

Table 2.3.1
Water Quality Limits

Commonly occurring metals and other constituents			
Constituent	**Drinking water limits (mg/L)**	**Stock water limits (mg/L)**	**Irrigation water limits (mg/L)**
Calcium (Ca)	---	---	---
Magnesium (Mg)	---	2,000	---
Sodium (Na)	250 [a]	2,000	See **SAR**
Potassium (K)	---	---	---
Iron (Fe)	0.3 [a][s]	---	---
Manganese (Mn)	0.05 [a][s]	---	2.0
Silica (SiO2)	---	---	---
Bicarbonate (HCO3)	---	---	---
Carbonate (CO3)	---	---	---
Chloride (Cl)	250 [a][s]	1,500	---
Sulfate (SO4)	250 [a][s]	1,500	[b]
Nitrate (NO3 as N)	10 [p]	100	---
Fluoride (F)	4 [p]	2	---
Phosphate (as P)	---	---	---
Total dissolved solids	500 [a][s]	5,000	2,000 [c]
Specific conductance	---	---	2,500 [c]
pH	6.5 - 8.5 [a][s]	---	4.5 - 9.0
Total hardness	---	---	---
Total alkalinity	---	---	---
Sodium Adsorption Ratio	---	---	8-18[d]
Trace metals			
Trace Metal	**Drinking water limits (ug/L)**	**Stock water limits (ug/L)**	**Irrigation water limits (ug/L)**
Aluminum (Al)	50-200 [a][s]	---	1,000
Antimony (Sb)	6 [p]	---	---
Arsenic (As)	10 [p]	50	100

Trace Metal	Drinking water limits (ug/L)	Stock water limits (ug/L)	Irrigation water limits (ug/L)
Boron (B)	---	---	See **Boron**
Bromide (Br)	---	---	---
Cadmium (Cd)	5 [p]	10	5
Chromium (Cr)	100 [p]	1,000	100
Cobalt (Co)	---	1,000	50
Copper (Cu)	1,300 [p]	500	200
Lead (Pb)	15 [p]	50	5,000
Lithium (Li)	---	---	2,500
Molybdenum (Mo)	---	---	5
Nickel (Ni)	---	---	200
Phosphate (P)	---	---	---
Selenium (Se)	50 [p]	50	20
Silver (Ag)	100 [a][s]	---	---
Strontium (Sr)	---	---	---
Titanium (Ti)	---	---	---
Uranium (U)	30 [p]	---	---
Vanadium (V)	---	---	---
Zinc (Zn)	5,000 [a][s]	24,000	2,000
Zirconium (Zr)	---	---	---

Footnotes:

--- There is currently no standard for this constituent.

[a] This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

[b] High concentrations of sulfate may restrict calcium uptake by crops.

[c] Varies with crop; generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2000 to 3000 micromhos/cm).

[d] Dependent upon other variables such as type of clay in soil and salt content of water. (See **SAR**)

[p] U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999.

[s] U.S. Environmental Protection Agency secondary contaminant level: revised October 13, 1999.

Ground-Water Information Center Online 1998 - 2006

Table 2.3.2

Water Quality of a Small Sampling of Wells Currently Being Used in McCone & Garfield Counties

Well Site Name	County	Depth	Sodium	Bicarbonate	Sulfate	Fluoride	TDS
73 RANCH	Garfield	1,003.0	1,524.00	737.00	2,464.00	2.80	4,577.17
JORDON JOHN	Garfield	280.0	667.00	795.00	793.00	1.00	1,885.00
CLAUSON WILLIAM	Garfield	300.0	502.00	812.00	391.00	1.00	1,330.18
73 RANCH	Garfield	1,003.0	1,484.00	656.40	2,346.00	<5.0	4,362.31
GARFIELD CO SCHOOL DIS #15	Garfield	350.0	447.00	912.60	33.80	3.35	1,048.79
BIG DRY SCHOOL HOUSE	Garfield	700.0	625.00	378.20	916.00	<0.5	1,788.81
MCKERLICK JOHN	Garfield	80.0	586.00	700.20	627.80	2.00	1,603.38
BURGESS RANCH	Garfield	365.0	670.00	271.00	681.00	1.00	1,806.43
BAKER JIM	Garfield	390.0	979.00	1,052.00	1,241.00	1.00	2,780.48
HOVERSON SARAH	Garfield	370.0	1,062.00	1,247.00	1,210.00	1.50	2,996.94
HAFLA JOE	Garfield	258.0	544.00	886.00	657.00	0.10	1,733.50
PLUHAR PHILLIP	Garfield	255.0	460.00	688.00	424.00	0.30	1,259.24
KEEBLER DEAN	Garfield	600.0	592.00	618.00	748.00	1.40	1,671.91
LANDERS H	Garfield	380.0	587.00	612.00	764.00	1.10	1,688.92
CITY OF CIRCLE	McCone	1,624.0	412.00	907.70	<25.0	4.31	1,002.02
CITY OF CIRCLE * WELL NO. 1	McCone	150.0	775.00	829.60	1,059.00	2.55	2,317.44
CITY OF CIRCLE	McCone	1,508.0	400.00	921.00	<0.1	5.20	1,004.81
CITY OF CIRCLE	McCone	1,508.0	472.20	886.90	<2.5	5.10	1,109.19
PRAIRIE ELK SCHOOL	McCone	200.0	1,891.00	2,596.00	2,055.00	0.95	5,303.20
DREYER RAY	McCone	189.0	820.00	824.20	1,229.00	0.80	2,537.42
WHITMUS FRANK	McCone	101.0	975.00	1,110.00	1,350.00	1.18	2,964.94
WHITMUS FRANK	McCone	640.0	476.00	1,085.00	3.40	5.50	1,129.85
WHITMUS FRANK	McCone	640.0	473.00	1,088.20	<25.0	5.96	1,123.78
WHITMUS FRANK	McCone	640.0	456.00	1,003.50	<2.5	6.67	1,101.34
WHITMUS FRANK	McCone	101.0	426.00	1,043.10	7.40	0.06	1,049.21
WALLER G.	McCone	240.0	520.00	1,000.40	837.70	0.10	2,044.70
MERRY HERSCHEL	McCone	260.0	700.00	683.20	887.80	2.70	1,967.40
KJELGAARD HAROLD	McCone	220.0	1,340.00	1,964.00	1,345.00	1.90	3,701.16
FLATTEN CLINTON	McCone	175.0	736.00	1,160.00	660.00	4.07	2,033.71
WAGNER R.	McCone	85.0	92.00	494.80	667.20	0.10	1,405.10
ZAHN DONALD	McCone	20.2	230.00	378.60	1,705.70	0.20	2,630.97
ZAHN DONALD	McCone	49.9	532.50	784.70	2,125.80	0.20	3,604.34
UNKNOWN - 19.4 MI SW WELDON	McCone	?	2,300.00	295.00	3,700.00	NR	8,128.32
PAWLOWSKI W.	McCone	37.4	193.00	448.40	522.20	0.40	1,107.56
SEXTON WALLACE	McCone	75.0	1,015.00	493.00	4,830.00	1.12	7,144.25
MUELLER ARNOLD	McCone	203.0	626.00	1,251.00	205.00	5.20	1,527.93

Well Site Name	County	Depth	Sodium	Bicarbonate	Sulfate	Fluoride	TDS
UNKNOWN – 10 MI S PRAIRIE ELK	McCone	?	4,400.00	488.00	5,000.00	NR	13,717.39
FILLWORTH R CIRCLE MT 20 MI	McCone	201.0	1,127.50	1,018.90	2,016.60	0.60	3,844.26
TWITCHELL JOHN	McCone	89.0	810.00	867.60	1,319.50	NR	2,675.14
DREYER RAY	McCone	17.0	1,116.00	915.00	3,171.90	0.50	5,320.63
PAINE EDWARD	McCone	123.0	1,230.00	1,283.90	1,659.50	1.00	3,591.35
HUSEBY D.	McCone	20.0	445.00	878.40	673.00	0.30	1,701.37
PAWLOWSKI OTTO	McCone	276.0	574.00	932.50	1,014.90	NR	2,237.45
JAMES MATTHEW	McCone	109.0	584.00	1,191.20	344.00	1.00	1,562.91
SHEFELBINE ORVILLE	McCone	307.0	977.00	982.00	1,511.00	0.20	3,188.91
SHEFELBINE ORVILLE	McCone	67.0	897.00	791.00	1,528.00	0.55	2,962.21
GASS MILTON	McCone	268.0	1,470.00	1,713.00	1,794.00	0.70	4,178.61
WRIGHT STEWART	McCone	365.0	954.00	1,315.00	947.00	2.20	2,619.10
GIBBS DAVID	McCone	210.0	825.00	819.80	1,068.20	2.30	2,349.54
HERZBERG JOHN	McCone	215.0	776.00	1,290.00	624.00	1.10	2,067.03
NEFZGER DEAN	McCone	175.0	1,083.00	1,576.00	1,245.00	2.00	3,150.22
GULDBERG	McCone	65.0	234.00	684.00	1,610.00	2.10	2,813.50

Meets Standards
Exceeds Standards

Table 2.3.2 does show that all of the wells have the majority of the contaminant levels above the recommended drinking water standards. Ground water supplies in the project area can generally be described as having high levels of inorganic chemicals such as iron, manganese, sodium, sulfates and total dissolved solids. The Montana Department of Environmental Quality and EPA's Secondary Contaminant List recommends limits for inorganic contaminants. A partial list is shown in Table 2.3.3.

Table 2.3.3
Secondary Standards for Inorganic Contaminants (Partial Listing)
(mg/l)

Sulfate	250.0
Sodium	200.0
Chloride	250.0
Iron	0.3
Manganese	0.05
Zinc	5.0
Total Dissolved Solids (TDS)	500.0
Nitrates	10.0

Table 2.3.4
Problems Caused by Poor Water Quality

Constituent or Physical Property	Source or Cause	Significance
Calcium (Ca) and Magnesium (Mg)	Dissolved from most soils and rocks, especially limestone, dolomite and gypsum. Ca and Mg are found in some brines.	Cause hardness and most of the scale-forming properties of water; soap consuming (See **hardness**). Usually have no effect on suitability of water for irrigation or stock water.
Sodium (Na) and Potassium (K)	Dissolved from most rocks and soils. Also found in brines and sewage.	High concentrations give a salty taste when combined with chloride. For most purposes moderate levels have little effect on the use of water. Sodium salts may cause foaming in boilers and high sodium adsorption ratio may limit use of water for irrigation.(See **Sodium Adsorption Ratio**).
Iron (Fe)	Dissolved from most rocks and soils. May also be derived from iron pipes, pumps, and other equipment.	On exposure to air, iron in ground water oxidizes to reddish brown sediment. More than about 0.3 mg/L stains laundry and utensils reddish brown. Iron and manganese together should not exceed 0.3 mg/L. Greater concentrations cause unpleasant taste and favor growth of iron bacteria but do not endanger health. Excessive iron may also interfere with the efficient operation of exchange-silicate water softeners.
Manganese (Mn)	Dissolved from some rocks and soils. High concentrations often associated with high iron content and with acid waters.	Same objectionable features as iron. Causes dark brown or black stain. For taste and aesthetic reasons iron and manganese together should not exceed 0.3 mg/L.
Silica (SiO2)	Dissolved from most rocks and soils, usually at low concentrations (5 to 30 mg/L).	Forms hard scale in pipes and boilers.
Bicarbonate (HCO3) and Carbonate (CO3)	Dissolved from carbonate rocks such as limestone and dolomite; oxidation of organic carbon.	Bicarbonate and carbonate produce alkalinity. Bicarbonates of calcium and magnesium in boilers and hot water heaters form scale and release carbon dioxide gas.
Chloride (Cl)	Dissolved from rocks and soils. Present in sewage and found in natural and industrial brines.	Chloride salts in excess of 100 mg/L give a salty taste to water. When combined with calcium and magnesium, chloride may increase the corrosive activity of water.
Sulfate (SO4)	Dissolved from rocks and soils containing gypsum, iron sulfides, and other sulfur compounds. Often present in some industrial wastes.	Sulfate in water containing calcium forms hard scale in boilers. In high concentrations, sulfate in combination with other ions gives a bitter taste to water. Concentrations above 250 mg/L may have a laxative effect. Domestic water supplies containing more than 1000 mg/L sulfate can be used for drinking if a less mineralized water supply is not available.
Nitrate (NO3)	Decaying organic matter, sewage, nitrate in soil and in fertilizers.	Concentrations much greater than the local average may suggest pollution. High concentrations are generally a characteristic of individual wells and not of entire aquifers. Nitrate encourages growth of algae and other

		organisms which produce undesirable tastes and odors. There is evidence that more than about 10 mg/L may cause methemoglobinemia ("blue baby syndrome") in infants, which may be fatal. Interference Syndrome is likely in cattle if stock water exceeds 50 to 100 mg/L of nitrate, especially for long periods of time. At more than 100 mg/L of nitrate there is the possibility of acute losses to Interference Syndrome and secondary disease.
Fluoride (F)	Dissolved in low concentrations from most rocks and soils. Most hot and warm springs contain more than the recommended concentration of fluoride.	When consumed during the period of enamel calcification fluoride in drinking water reduces the incidence of tooth decay in children. But fluoride may cause mottling of the teeth, depending on the concentration of fluoride, the age of the child, the amount of drinking water consumed, and the susceptibility of the individual. 0.8 to 1.7 mg/L is optimum, depending on the air temperature.
Total dissolved solids (TDS)	Chiefly mineral constituents dissolved from rocks and soils. Includes almost all of the material that is in solution in the water. Older analytical methods determined dissolved solids by evaporation of the sample and the weight of the residue. During evaporation, however, some of the bicarbonate (HCO3) was lost, causing under-reporting of dissolved solids. Modern analytical methods retain all of the bicarbonate, but the calculation for total dissolved solids includes only the percentage of the bicarbonate that would have been retained under conditions of evaporation.	Water with more than 1000 mg/L of dissolved solids may contain minerals which impart a distinctive taste. Water with more than 2000 mg/L dissolved solids is generally too salty to drink. Total dissolved solids concentrations are useful for comparison to established water-quality standards.
Sum of dissolved constituents	Chiefly mineral constituents dissolved from rocks and soils. Includes all material that is in solution in the water.	The calculation includes all of the bicarbonate measured in the sample. The Sum of Dissolved Constituents more accurately reflects the actual amount of dissolved mineral matter in the water than does total dissolved solids (TDS). However, most standards are written for TDS and the Sum of Dissolved Constituents should not be compared to those standards.
Specific conductance	Dissolved minerals in the water.	Specific conductance is a measurement of the water's capacity to conduct an electric current. Conductance varies with the concentration of dissolved solids in the water and their degree of ionization. When measured in micromhos/cm it is generally 1 to 1.5 times the total dissolved solids content.
pH (Hydrogen-ion activity)	Acids, acid-generating salts, and free carbon dioxide lower pH. Carbonate, bicarbonate, hydroxide, phosphate, silicate, and borate raise the pH.	The pH is a measure of acidity. A pH of 7.0 indicates neutrality of a solution. Values higher than 7.0 denote increasing alkalinity; values lower than 7.0 indicate increasing

		acidity. Corrosiveness of water generally increases with decreasing pH, but excessively alkaline waters may also attack metals. A pH range between 6.0 and 8.5 is acceptable and normal for most waters in Montana.
Hardness as $CaCO_3$	In most waters nearly all the hardness is because of calcium and magnesium.	Hard water consumes soap before a lather will form, deposits soap on bathtubs, and forms scale in boilers, water heaters, and pipes. Waters of hardness 0 to 60 mg/L are termed soft; 61 to 120 mg/L moderately hard; 121 to 180 mg/L hard; and more than 180 mg/L very hard.
Alkalinity	Formed by the presence of certain anions, predominantly HCO_3 and CO_3. These anions are formed by the action of carbon dioxide in water on carbonate rocks such as limestone and dolomite. Certain organic materials may also produce alkalinity.	Alkalinity is an indicator of the relative amounts of carbonate (CO_3), bicarbonate (HCO_3), and hydroxide ions.
Sodium Adsorption Ratio (SAR)	Indicates the relative abundance of sodium as compared to calcium and magnesium. Greater SAR values indicate a greater relative abundance of sodium.	A high sodium concentration in irrigation water combined with low calcium and magnesium concentrations usually reduces soil tilth and impairs plant growth.
Trace metals	Dissolved from rocks and soils. Some metals may be released from plumbing, pipes, etc.	Limits are usually recommended for health reasons. Limits for drinking water generally are conservative and higher concentrations may be permitted if the water is the best available supply.
Bromide	Present in high concentrations in some brines.	The presence of low concentrations in fresh water is not known to endanger health.
Strontium	Dissolved from igneous and sedimentary rocks.	The presence of low concentrations in fresh water is not known to endanger health.
Boron	Dissolved from igneous and sedimentary rocks.	Boron is essential to plant growth, but exceedingly toxic to plants at concentrations only slightly above optimum. The optimum concentration varies with plant type and ranges from about 300 micrograms/L to 4,000 micrograms/L. (What is optimum for one plant type may be toxic to another type).

Ground-Water Information Center Online 1998 - 2006

The Montana Department of Environmental Quality also oversees testing and monitoring of the water quality of public water supply systems which include Jordan, Circle, Richey and Lambert.

2.4 PUBLIC WATER SYSTEMS

2.4.1 Municipal Water Systems

There are four (4) communities (Circle, Richey, Lambert, and Jordan) in the area which have water distribution systems, but only three (3) of these communities operate water treatment facilities. The remaining system (Jordan) pumps from a well field to the distribution system, with chlorination for purposes of disinfection. The municipal systems are shown in Figure 2.4.1.

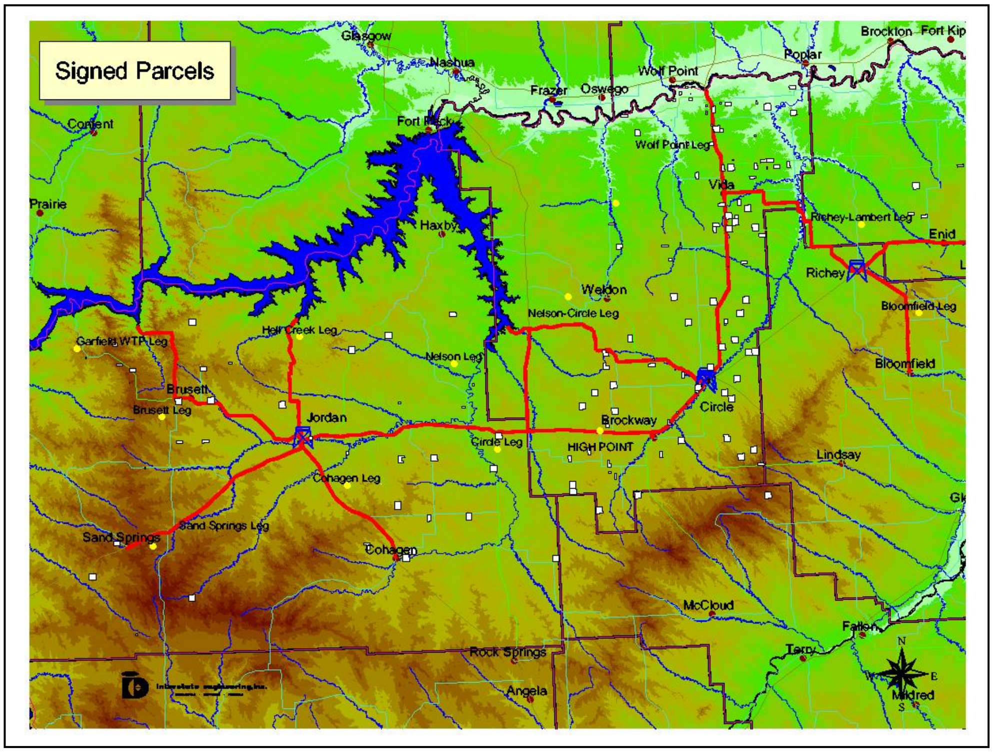


Figure 2.4.1
Municipal Water Systems

2.4.2 Rural Water Systems

There are no existing county water districts or rural water systems in the study area.

2.5 POPULATION

The population on a county basis of the service area is approximately 21,800 people and is listed in Table 2.5.1.

Table 2.5.1
2000 Population by County Subdivision: Montana
Source: U.S. Census Bureau, Census 2000 Redistricting Data
(Public Law 94-171) Summary File

COUNTY POPULATION STATISTICS					
	Population				
County	**2000**	**2001**	**2002**	**2003**	**2004**
GARFIELD	1,268	1,263	1,245	1,241	1,218
McCONE	1,966	1,901	1,842	1,814	1,775
DAWSON	9,044	8,919	8,738	9,133	8,635
RICHLAND	9,626	9,445	9,276	9,155	9,112
PRAIRIE	1,188	1,214	1,187	1,166	1,147
Totals	23,092	12,742	22,208	22,143	21,877

If the two major cities of Glendive in Dawson County and Sidney in Richland County are removed, the study area population is approximately 12,300 individuals.

2.6 MEDIAN HOUSEHOLD INCOME

The median household income varies widely over the project area.

The median household income (MHI) ranges from a low of $25,450/yr in Prairie County to a high of $32,110/yr in Richland County with an average of $28,920 and a median of $29,718.

Table 2.6.1
Average Median Household Income by County

Dawson County	$31,393
Garfield County	25,917
McCone County	29,718
Prairie County	25,451
Richland County	32,110

Rural Development loans money to projects at rates based upon median household income.

According to the Circular as of 12/31/05

Poverty Rate	4.5%	MHI $25,492 or less
Intermediate Rate	4.5%	MHI $25,493 to $31,865
Market Rate	4.5%	MHI $31,866 or more

Table 2.6.2 shows the MHI for each community in the project area and what interest rate they would qualify for based upon RD classifications.

Table 2.6.2		
Dawson County	$31,393	Intermediate
Garfield County	25,917	Intermediate
McCone County	29,718	Intermediate
Prairie County	25,451	Poverty
Richland County	32,110	Market
Circle	27,500	Intermediate
Richey	23,750	Poverty
Jordan	26,250	Intermediate

CHAPTER 3
EXISTING FACILITIES

3.1 CIRCLE MUNICIPAL WATER SYSTEM

3.1.1 General Description

The Town of Circle currently has a central water distribution system, a reverse osmosis water treatment facility and 350,000 gallons of finished water storage. The Town of Circle currently employs one full-time water treatment and distribution employee that is responsible for the operation, maintenance and testing of the water distribution system. The State of Montana required back-up position for the water department is a part-time position.

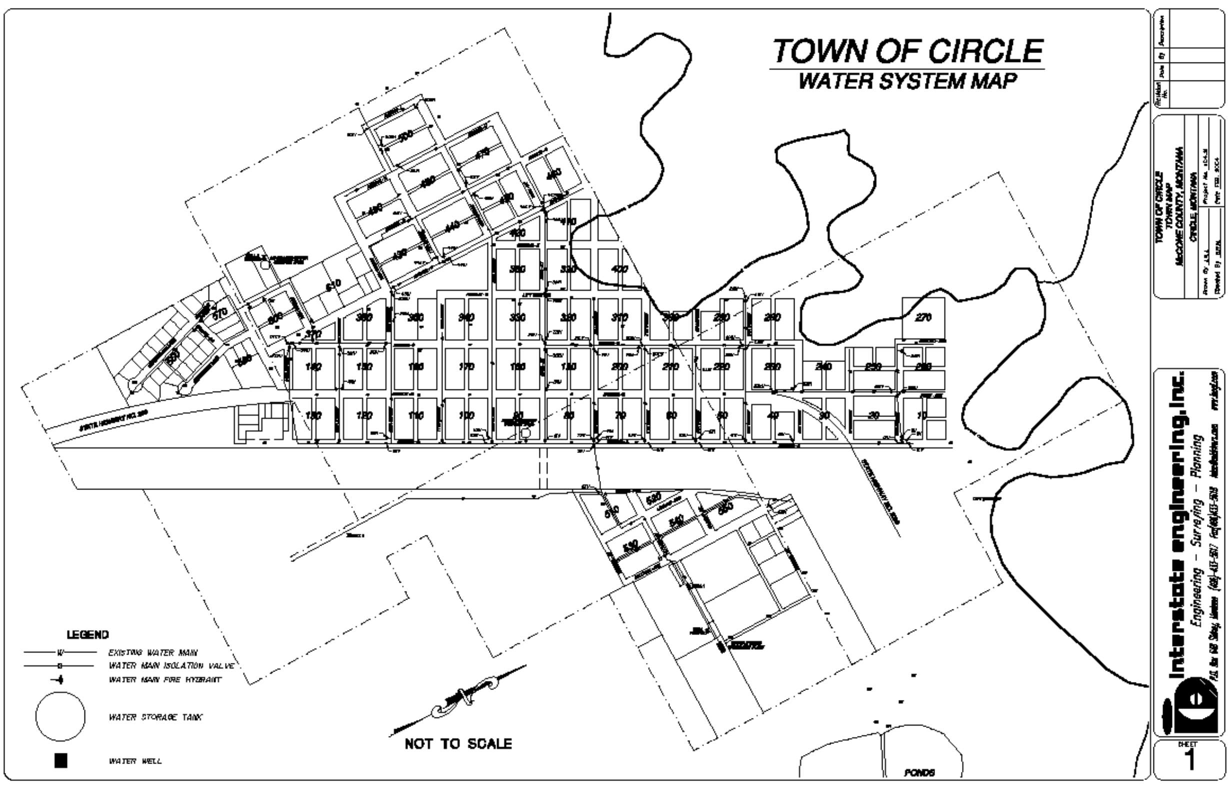


Figure 3.1.1
Town of Circle

3.1.2 Current Water System Components

Water Source – Well Field – There are two wells that serve the Town of Circle both wells are located within a mile of the water treatment plant. The wells are both over 1000 feet deep and have high levels of fluoride and sodium. The well screens have had problems with plugging due to a heterotrophic bacteria that grow in the well.

Water Treatment – The water treatment plant is located on the south end of the Town. The water plant produces 300 gpm. The peak day production has been recorded at 250,000 gallons. The treatment process of the water plant is a reverse osmosis membrane system that was required to remove the high levels of the regulated contaminate of fluoride found in the well water. The pressure vessels that treat the water are manufactured by Harn Distribution System.

Water Distribution – The water distribution system serving Circle is comprised of 4 to 8" watermains comprised of PVC, cast iron and asbestos cement pipe. The existing waterlines range in age from 50 years to less than 10 years.

Water Storage - The City has three sources of finished water storage – a 50,000-gallon elevated steel tank; a 250,000-gallon on-ground steel tank; and a 50,000-gallon concrete clear well at the water plant.

Current water rates on the system are:

User: $31/month with 2,500 gallon water use
$2.60/1,000 gallons thereafter.

The current rate for 8,000 gallons is $45.30

	2004	2005
Water System Revenue	$223,684	$213,077
Water System Expenses	$216,398	$190,379
Annual Debt Service	$ 55,640	

3.2 TOWN OF JORDAN

3.2.1 General Description

The Town of Jordan has a central water distribution system, no water treatment facility, a chlorine gas water disinfection system, two water wells and 200,000-gallons of finished water storage. The Town of Jordan currently employs one full-time operator.

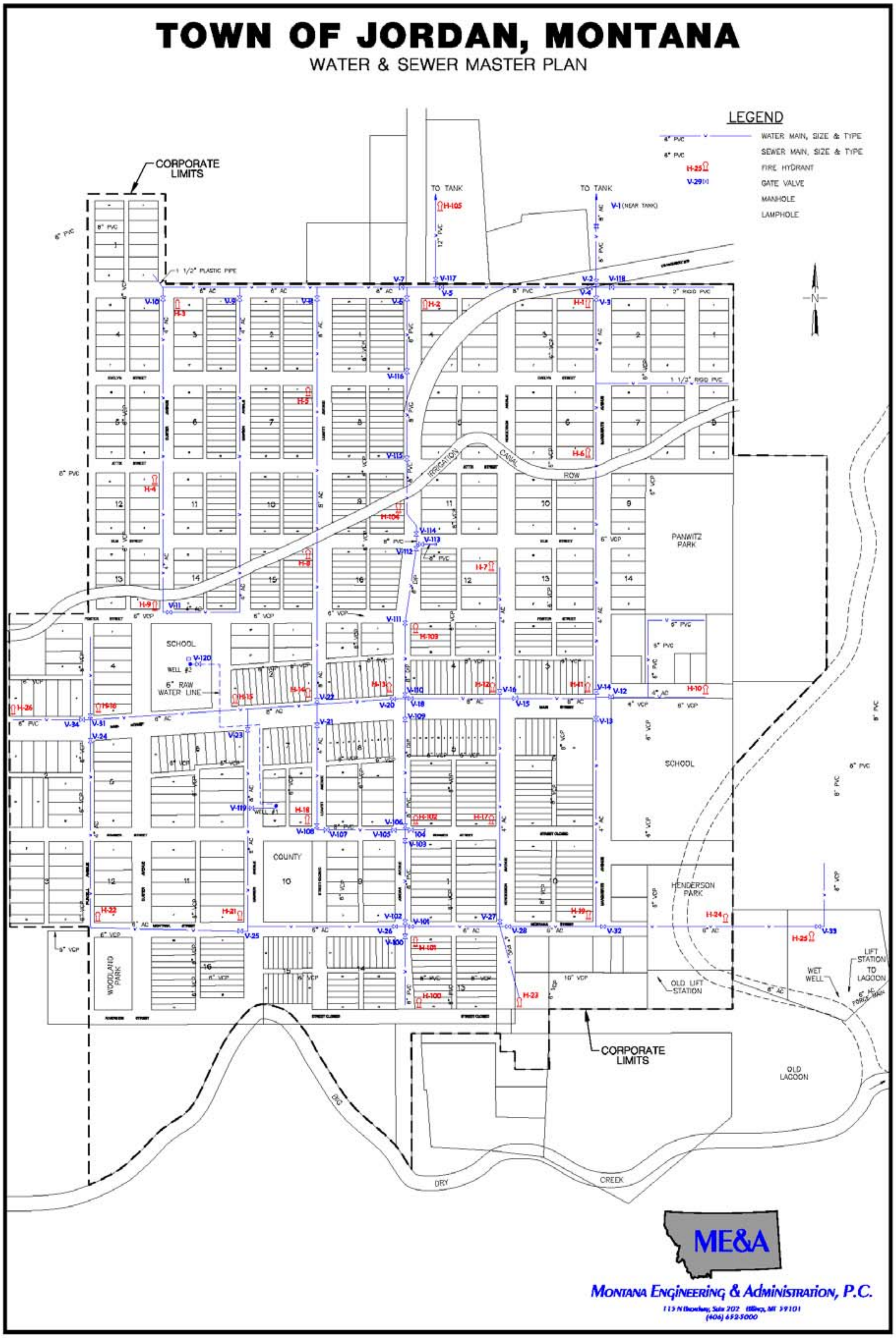


Figure 3.2.1
Town of Jordan

3.2.2 Current Water System Components

The facilities are considered in good condition with the major infrastructure components only 10 to 12 years old. The Town recently replaced a well and is replacing a large segment of their distribution system.

Well Field - There are two wells located within one mile of Jordan. The wells are 8" in diameter and 300' deep. Each well is capable of producing approximately 150 gpm and one typically runs at a time producing 150 gpm.

Water Treatment – There is no water treatment at this time, only disinfection utilizing gas chlorine.

Water Storage – The system has a total of 200,000-gallons of water storage.

Distribution System – The distribution system is comprised of over 30 blocks of various sizes of pipeline from 2" to 6" in diameter.

Current water rates on the system are:

User	$18.95 / month with zero water usage
	$2.03 / 1,000 gallons thereafter

The rate for 8,000 gallons is $31.13

	2004	2005
Water System Revenue	$52,850	$93,211
Water System Expenses	$41,894	$70,976
Annual Debt Service	$25,056	

3.3 TOWN OF RICHEY

3.3.1 General Description

The Town of Richey has a central water distribution system, two water wells, a reverse osmosis water treatment facility and 40,000-gallons of on-ground water storage. The Town of Richey employs one full-time city services superintendent that operates the water treatment, distribution and storage systems as well as the wastewater operations and street maintenance. The State of Montana required back-up operator is addressed through an agreement with Circle.

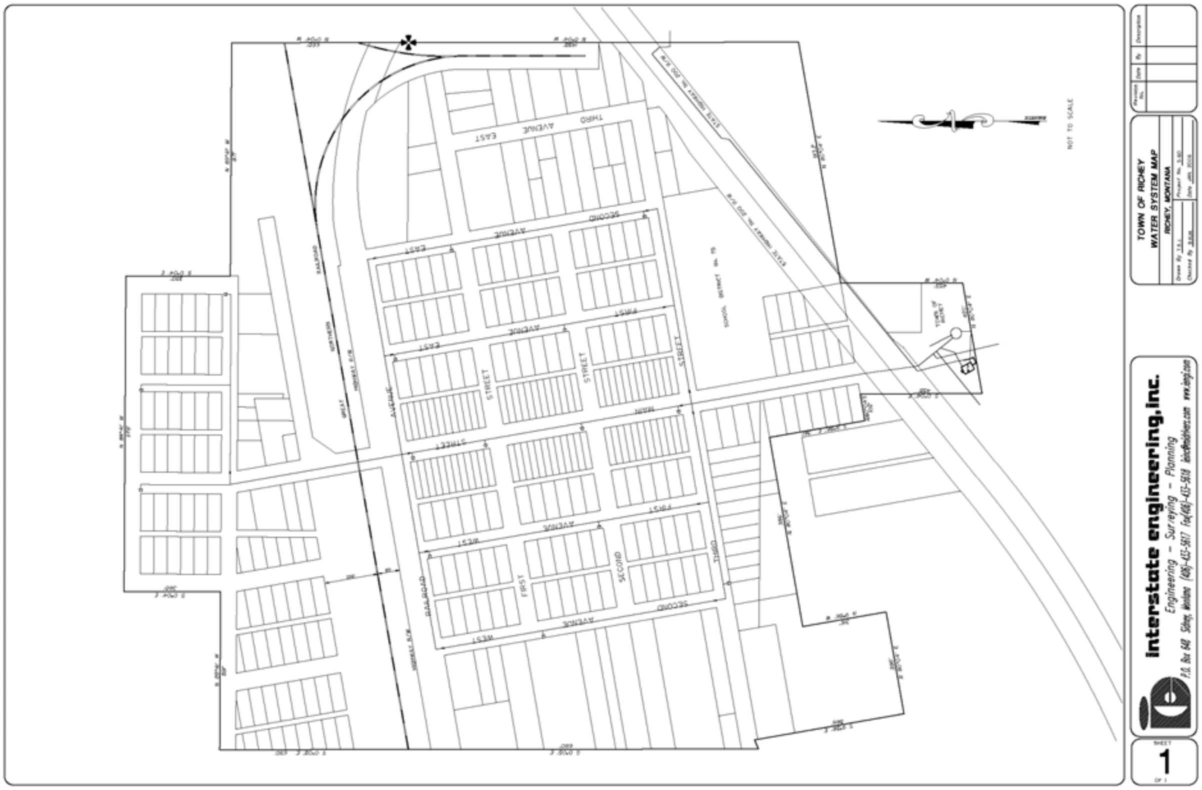


Figure 3.3.1
Town of Richey

3.3.2 Current Water System Componenets

Well Field – There are two water wells serving Richey – one adjacent to the water treatment facility and one in the Town park about ½ mile east of the treatment facility. The raw water produced by the wells has a level of the regulated contaminant fluoride.

Water Treatment – The water treatment facility in Richey is a skid mounted reverse osmosis facility that is required to reduce the high levels of fluoride, and produces up to 35 gpm of finished water.

Water Storage – There is a 40,000-gallon on-ground water storage reservoir adjacent to the water treatment facility.

Distribution System – The distribution system is comprised of PVC, CIP and ACP main ranging from 4" to 8" in diameter.

Current water rates on the system are:

$15.75 for first 1,000 and $2.64 / 1,000

The rate for 8,000 gallons is $34.23

	2004	2005
Water System Revenue	$43,061	$44,256
Water System Expenses	$40,259	$43,591
No Outstanding Debt		

3.4 LAMBERT COUNTY WATER AND SEWER DISTRICT

3.4.1 General Description

The Lambert County Water and Sewer District is an un-incorporated town with a population of 140 according to the 2000 Census. The District has two water wells that have high levels of fluoride, a membrane filtration plant, and 50,000 gallon on-ground water storage. The water treatment, storage and distribution system are operated by a part-time certified operator. The State of Montana required back-up operator is provided by a joint use agreement with Richey.

Figure 3.4.1
Town of Lambert

3.4.2 Current Water System Components

Well Field – There are two (2) wells located ½ mile east of the District boundary. The wells are 6" and 8" in diameter and the 6" has a depth of 1,400 feet and the 8" has a depth of 1,200 feet. These wells were constructed in 1976 and in 2004. The well capacity for each is 80 gpm. The water quality in each well exceeds the limits set by EPA for fluoride. This requires that the water be treated.

Water Treatment – The District has a membrane treatment facility (nano-filtration) that is mounted on two skids that can produce 35 gpm each of finished water. The membrane system was required to reduce the levels of fluoride in the water. The Lambert County Sewer and Water District was under an administrative order to produce water under 2 ppm of fluoride and in 2004 completed the current treatment facility.

Water Storage – The system has a 50,000 gallon on-ground storage tank.

Distribution System – The distribution system is comprised of over 14 blocks of various sizes of PVC, ranging from 2" to 4" in diameter with the majority being 4". The District has 74 hookups of which 10 are metered.

The District has a flat rate for water at this time, which is $42.00 / EDU.

CHAPTER 4
NEED FOR PROJECT

4.1 HEALTH AND SAFETY

4.1.1 Existing Water Quality in Service Area.

The primary source of water in the service area of the DRWA is ground water. There is a chart in Chapter 2 (Table 2.3.2) that lists the water quality of over 20 wells in the service area and they all indicate high levels of contaminants. The contaminants are of two types – primary and secondary. The primary contaminants such as fluoride must be treated if the water is to be used in a public drinking water system. The secondary contaminants such as sodium, sulfates and total dissolved solids have aesthetics, taste or odor problems that do not require treatment for use in a public water system. The use of water with high secondary contaminants could cause staining and fouling of fixtures and will have a laxative effects on those drinking it. Each water supply is required to publish an annual report as to the water quality and how it compares to the safe domain water standards. Below is an excerpt from the Town of Jordan's report.

"We're pleased to report that our drinking water is safe and meets federal and state requirements. However, as many of you know, although our water is labeled as safe to drink under the Safe Drinking Water Act, some of the unregulated parameters affect the taste and may affect the health of a limited population. The concerns are sodium and the total dissolved solids in the water. The sodium level is high enough that people with high blood pressure may want to consider a separate source of drinking water. The total dissolved solids are high enough to have a laxative effect on people that have not become conditioned to the water. We are aware of these problems with our source of drinking water, but have been unable to find a solution that is financially feasible."

The proposed regional water system will provide a high quality source of water for the existing public water system, existing rural users and the potential support business that can serve the agriculture and industry in the area.

4.1.2 National Standards for Drinking Water.

The United States has one of the safest water supplies in the world. However, national statistics don't provide specific data about the quality and safety of the water coming out of residential home taps. The reason is because drinking water quality varies from location to location, and depends on the condition of the source water from which it was drawn and the type of treatment received.

Every community water supplier must provide an annual report to its customers in accordance to the DEQ rules on consumer confidence. The report provides

information on local drinking water quality, including the water's source, the contaminants found in the water, and how consumers can get involved in protecting drinking water. For an overview on drinking water issues, read EPA Drinking Water and Health What You Need to Know!.(a copy is found in the Appendix)

The Safe Drinking Water Act requires the Environmental Protection Agency (EPA) to set standards that, when combined with protecting ground water and surface water, are instrumental in ensuring safe drinking water. These regulations are continually being updated, for example: on January 22, 2001, EPA adopted a new standard which revised the 50 parts per billion (ppb) standard for Arsenic in drinking water. Public water systems must now comply with the 10 ppb standard, beginning on January 23, 2006. EPA is making it clear that when a monitoring result is expressed in milligrams per liter (mg/L) rather than ppb, any monitoring result greater than 0.010 mg/L is a violation of the January 2001 arsenic standard. Because of this the EPA has amended the Arsenic Maximum Contaminant Level (MCL) to express it as 0.010 mg/l. This type of regulation change means that existing facilities that cannot meet the new standards must be upgraded. The cost of future upgrades is paid for primarily by the users of the affected system.

By connecting to the Dry Redwater Regional Water Authority (DRWA), the towns and rural water users would be able to replace their water supply in a manner which will help them economically comply with the future and current drinking water regulations. The 3 existing treatments systems currently are providing acceptable drinking water, but as regulations tighten and these 3 communities with treatment facilities need to replace or upgrade their facilities, the future cost for the individual user to provide the treated water will be expensive. The use of membrane technology by small water systems is not common but due to the lack of alternatives, these 3 communities had to use this type of treatment to meet federal standards on fluoride.

All of the communities within the DRWA, as well as the majority of the rural residents of the project area, have levels of inorganic contaminants well in excess of the secondary standards for total dissolved solids, iron, manganese, and hardness. In addition a large portion of the area has levels of sodium and sulfate which have some health concerns for patients requiring low sodium diets and laxative impacts for some of the population. By connecting to the DRWA, the residents would have a high quality water meeting all primary and secondary standards delivered to their homes.

See Table 4.1.1 which lists the legally enforceable standards that apply to public water systems for the currently regulated contaminants, potential health effects, and sources. Table 4.1.2-National Secondary Drinking Water Regulations-describes the guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water

The proposed Ground Water Rule (GWR) and Surface Water Rule (SWR) require both mandatory disinfection and continuous monitoring of the residual disinfectant in the system. These requirements will cause significant concerns for all the

communities within the DRWA study area. Jordan has not consistently utilized chlorine in the past because of the negative effects of the precipitation of iron and manganese. These effects can include significant staining of clothes and plumbing fixtures.

Table 2.3.2 found in Chapter 2 lists some of the existing water quality in wells in the service area.

Table 4.1.1
National Primary Drinking Water Standards
(Source EPA Website)

Inorganic Chemicals	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Antimony	0.006	0.006	Increase in blood cholesterol; decrease in blood glucose	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic Finalized 10/30/01	none[7]	10 ppb	Skin damage; circulatory system problems; increased risk of cancer	Erosion of natural deposits; runoff from glass & electronics production wastes
Asbestos (fiber >10 micrometers)	7 million fibers per liter	7 MFL	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits
Barium	2	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium	0.005	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits
Copper	1.3	TT[8]; Action Level=1.3	Short term exposure: Gastrointestinal distress. Long term exposure: Liver or kidney damage. People with Wilson's Disease should consult their personal doctor if their water systems exceed the copper action level.	Corrosion of household plumbing systems; erosion of natural deposits
Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride	4.0	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth.	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories

Inorganic Chemicals	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Lead	zero	TT[8]; Action Level=0.015	Infants and children: Delays in physical or mental development. Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits
Mercury (inorganic)	0.002	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and cropland
Nitrate (measured as Nitrogen)	10	10	"Blue baby syndrome" in infants under six months - life threatening without immediate medical attention. Symptoms: Infant looks blue and has shortness of breath.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (measured as Nitrogen)	1	1	"Blue baby syndrome" in infants under six months - life threatening without immediate medical attention. Symptoms: Infant looks blue and has shortness of breath.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines
Thallium	0.0005	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and pharmaceutical companies

National Secondary Drinking Water Regulations (NSDWR or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

Table 4.1.2

National Secondary Drinking Water Regulations

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L

Contaminant	Secondary Standard
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

4.2 GROWTH

This project would allow growth in some rural settings within some portions of the service area. This would be due to an influx of people wishing to live in a rural setting but being within driving distance of their work place such as the towns of Glasgow, Wolf Point, Circle, Jordan, Glendive and Sidney. During the course of the feasibility study the interest within the service area has grown. There are two large expansion areas – north and east Richland County and the west Glendive area in Dawson County – that due to the time and budget constraints are not a part of this document, but will be addressed by addendum at a later date. These areas have shown a great interest and based on the sign ups and the density of the signups these areas will be very feasible to receive water from the DRWA.

4.3 ECONOMIC DEVELOPMENT

A moderate amount of economic development can be expected to occur in the service area due to this project. The potential for a coal-fired power plant/biofuel facility to be located in the study area would have a great realized benefit for the project. The benefits would be that a large user would be located very near the potential water treatment facility, a potential source of revenue to be used to help cost share an intake facility and a source of temporary water users in the form of a construction site work camp. These will all help the overall DRWA project by increasing the user base, allow the costs of the water treatment facility to be recovered more quickly due to the water use of a temporary (3-4 year) construction camp.

The economic development impact due to a regional water system starts with the actual construction phase of the project. The building of the rural water system will require a large workforce that will probably have a majority of the workers residing outside the service area. This will require temporary housing, food, clothing and other support services within the service area to accommodate the construction crew. The overall construction time frame will be 4 to 6 years depending on levels of Federal support and local user signups.

The long term economic impacts will be to the agricultural, energy, tourism and recreation industries. The potential for high quality water within a 4 county area will allow support businesses to build closer to the producer – whether it is a grain or cattle processing facility, or an energy related facility. The potential for new rural housing developments is increased. There are a lot of absentee landowners in the service area that cannot live on the land due to poor water quality; this project would help provide the necessary water to allow for the landowners to live on their land.

The development of hunting, fishing or other recreational camps will provide an economic uplift for the service area. Eastern Montana has an abundance of natural resources that can be enjoyed by sportsmen and recreationalists alike, but development of facilities to serve these groups is difficult due to lack of high quality water. This project will provide that necessity.

The existing communities in the service area could realize a great deal of economic development from the temporary influx of construction workers to the long term increase in permanent population of the project due to a high quality stable water source.

4.4 BENEFITS OF A REGIONAL SYSTEM

The information listed below was provided by the steering committee during the initial informational meetings.

- **Improved quality of life associated with high quality safe drinking water:** Health benefits of good water. More and more harmful chemicals (many carcinogens) are being found in our ground water all the time. Water from the DRWA system will meet the same water quality standards as all other public systems.
- **Reduction of costs associated with water:** no need to drill or maintain a well. Discontinuing water softening, water treatment, and water hauling. No electrical pumping costs.
- **Fire Protection:** Hydrants could be installed at various places for rapid, water refill for rural fire fighting.
- **Livestock Use:** Permanent backup in case of well failure. Adequate supply due to steady pressure. Increased weight gains in calves. Possible cost share for delivery to pastures from the NRCS / EQIP Program.
- **Spray Use:** Fewer plugged nozzles. Potential reduction in chemical costs as result of increased spray efficiency. The system supplies a current analysis of water quality upon request to assist the user in proper mixing of chemicals. This means better mixing of chemicals.
- **Increased resale value of the user’s property:** Resale value may increase up to 10% of the property value of the homestead.
- **Improved potential for economic / community development:** Demand readily available for quality and quantity of water. Benefits of construction employment.

CHAPTER 5
PERMIT REQUIREMENTS AND RESPONSIBILITIES

Federal

- Corps of Engineers Section 404 permits for stream crossings.
  - 404 Certification – Any activity requiring a federal permit or license that may result in a discharge to State water is regulated.
- Federal water quality permits.
- Bureau of Reclamation.
- Bureau of Land Management.
- US Fish and Wildlife Service (Charles M. Russell Wildlife Refuge).

State

- Montana State Highway Department for the use of highway right-of-way for the routing of the pipe line, highway crossings and bridge crossings.
  - RW-20 Permit – A permit is required when construction work is to be done within a Montana Department of Transportation (MDT) right-of-way.
- Department of Natural Resources and Conservation for water use rights from Fort Peck and crossing state lands.
  - ROW Easements/Land Use License – Authorizes construction activities on state trust lands in Montana.
  - Montana Environmental Policy Act (MEPA) – Projects which will have an impact on the environment require an environmental assessment (EA) or an environmental impact statement (EIS).
- State water quality permits.
  - MPDES Wastewater Discharge (Service Water) – Requires all discharges to surface water, including those related to construction de-watering, suction trenches and hydrostatic testing to be permitted.

    - Storm Water Discharge – Requires permitting of construction-related, industrial and mining storm water discharges. Construction activity must meet regulatory acreage requirements.

    - 318 Authorization (Turbidity) – Any activity in any State water that will cause unavoidable short-term increase in turbidity or sediment, generally associated with construction projects, is regulated.

    - 310 Permits/SPA 124 – Any activity that physically alters or modifies the bed or banks of a stream is regulated. Private individuals require a 310 permit from the local Conservation District. Government agencies require a SPA 124 authorization from the Department of Fish, Wildlife and Parks.

- Montana Department of Fish Wildlife & Parks and Department of Natural Resources and Conservation for any crossing of wetlands.

- Montana Department of Environmental Quality.

    - Public Water Supply – New construction, alteration, extension or operation of a public water supply requires approval from the Department of Environmental Quality.

    - Air Quality Permits – Permit is required for construction, installation and operation of equipment or facilities that may cause or contribute to air pollution.

    - Floodplain Development Permit – Required for planning new construction within a designated 100-year floodplain.

    - County Noxious Weed Control Act – Titles 7, Chapter 22, Sections 7-22-2101 through 7-22-2153, MCA, and Administrative Rules of Montana (ARM) 7.1.201 through 7.1.203.

    - Section 7 Consultation – Identifies any endangered or threaten species and habitat that may be affected by a project.

    - Section 106 Consultation National Historic Preservation Act – Determines impact on heritage properties on state trust lands and those affected by federal permits and actions. For this project, a programmatic agreement between the sponsors may be considered.

County	-	County Commissions in Dawson, Garfield, McCone, Prairie and Richland County for right-of-way easements along county roads and county road crossings.
Other	-	Permits will also be required for crossings of railroad, electrical, telephone, gas and oil right-of-ways.

CHAPTER 6
PRELIMINARY DESIGN

6.1 POPULATION PROJECTIONS

6.1 Base Demographics and Initial Water Demand

Base demographics and population were obtained from the Montana National Resources information Database and the Montana Census and Economic Information Center (CEIC)[1]. The data obtained from these information sources was used in preparing the initial demands for potential users and communities within the Dry Redwater Service Area. The proposed service area is shown in the shaded area in Figure 6.1.

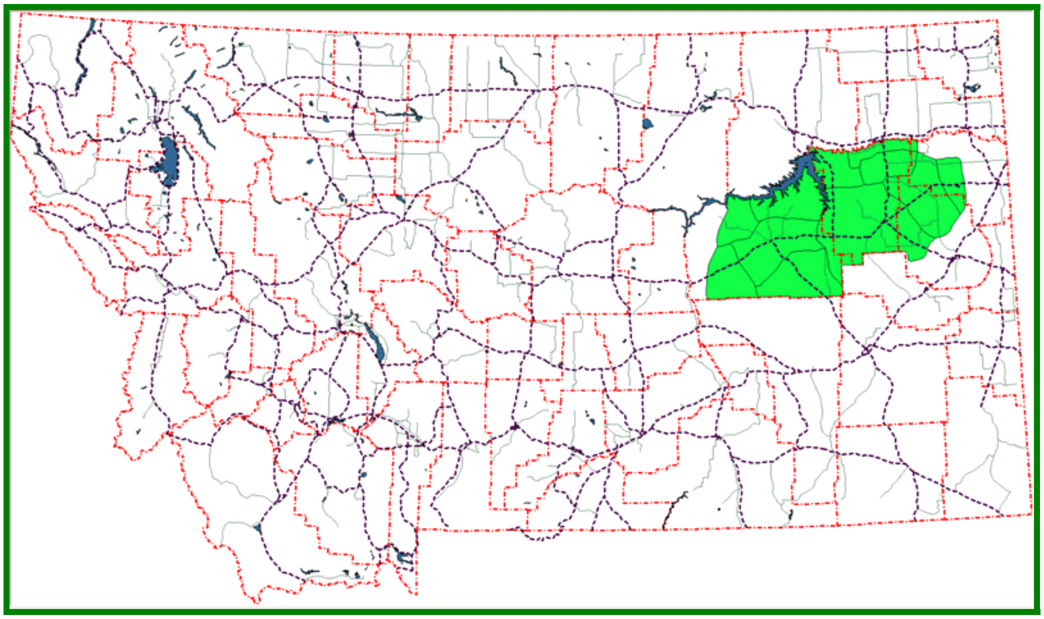


Figure 6.1 - Dry Redwater Service Area

6.1.1 Initial Estimate of Persons per Housing Units

In order to estimate the number of people occupying each housing unit in the Dry Redwater Service Area and to estimate the per capita water demand, data obtained from the CEIC was tabulated by county. The accepted per capita water use of 125 gallons per day was used in this preliminary analysis to model the core pipeline. Final pipeline sizes will be determined in the future as more detailed analysis is done.

Table 6.1.1 through Table 6.1.3 summarizes the data used for the initial assumptions.

[1] CEIC information can be viewed at http://ceic.commerce.state.mt.us/index.htm

Table 6.1.1 - County Population

COUNTY POPULATION STATISTICS					
			Population		
County	**2000**	**2001**	**2002**	**2003**	**2004**
GARFIELD	1,268	1,263	1,245	1,241	1,218
McCONE	1,966	1,901	1,842	1,814	1,775
DAWSON	9,044	8,919	8,738	9,133	8,635
RICHLAND	9,626	9,445	9,276	9,155	9,112
PRAIRIE	1,188	1,214	1,187	1,166	1,147
Totals	23,092	12,742	22,208	22,143	21,877

Table 6.1.2- County Housing Units

COUNTY HOUSING UNIT STATISTICS					
			Housing Units		
County	**2000**	**2001**	**2002**	**2003**	**2004**
GARFIELD	950	954	958	960	957
McCONE	1,086	1,084	1,081	1,078	1,080
DAWSON	4,182	4,160	4,153	2,474	4,155
RICHLAND	4,557	4,559	4,552	4,551	4,560
PRAIRIE	995	985	970	4,022	935
Totals	11,770	11,742	11,714	17,889	11,687

Table 6.1.3 - Persons/Housing Unit

CAPITA/HOUSING UNIT						
County	**2000**	**2001**	**2002**	**2003**	**2004**	***Average***
GARFIELD	1.33	1.32	1.29	1.28	1.27	1.30
McCONE	1.81	1.75	1.71	1.69	1.70	1.74
DAWSON	2.37	2.35	2.34	2.35	2.36	2.35
RICHLAND	2.11	2.07	2.03	2.01	2.05	2.06
PRAIRIE	1.35	1.30	1.31	1.29	1.29	1.29
					Average	1.74

6.2 INTEREST SURVEY

The Dry Redwater Steering Committee undertook comprehensive canvassing of all rural residents and communities in the project area and held over 20 public meetings from 2004 to May 2006. A summary of these meetings and surveys is found in Chapter 10. As of May, 2006, 902 rural households and pasture taps and the communities of Circle, Jordan, Lambert, and Richey signed up to be included in the feasibility study. The Table 6.2.1 below summarizes the interest survey.

Table 6.2.1

	Richland	McCone	Prairie	Garfield	Dawson	TOTAL
Houses	97	326	2	82	35	542
Pasture Taps	87	191	12	52	18	360
Total Rural:	184	517	14	134	53	902
Jordan Users				250		250
Circle Users		360				360
Richey Users					147	147
Lambert Users	80					80
Total City Users:	80	360	0	250	147	837
Cabin Users		60		50		110
TOTAL:	**264**	**937**	**14**	**434**	**200**	**1849**

Enclosed in the Appendix of this report is a list of all rural residents that have signed up. A copy of the user survey form utilized to develop a list of needs of each user is also found in the Appendix.

6.3 WATER DEMANDS / AVAILABILITY

1. General This section will outline the water demands of the various types of users and at the end of this section the total water volume needed is summarized.

2. Rural User The user survey form was used to determine if the user was either a standard user and/or a special user. (pasture tap)

   A standard user is defined as normal domestic water usage (household, lawn, etc.). Based on historical data of existing regional water systems, these users were assumed to require approximately 0.7 gal/min over a long period of time. This flow was used as a peaking factor for each user for pipeline sizing. The average water usage per day per person is estimated to be 125 gallons. The assumption being that not all users will be on at any one time, so actual use of 3 – 5 gpm is sustainable for any given user.

   A special user would be one that would require additional flow for miscellaneous uses such as livestock, crop spraying, etc. The user would be required to provide storage (stock tank) so that the flow required can be delivered over a 24-hour period. Each special user had an estimate of the

quantity of water they would be delivered at 5 gpm and its intended use is for livestock watering.

The volume of water required to be delivered to each pasture tap was widely discussed.

When the average daily temperature increases from 36^{o} F to 90^{o} F, water intake increases from 1.6 times to 2.7 times for beef cattle and 1.5 to 3 times for sheep. Water needs increase when environmental temperatures rise above 70^{o} F. Water temperature is a major factor that governs water consumption. Ideal water temperature is 45^{o} F to 55^{o} F which is what is typically delivered in a rural water system.

Grazing rates in the Dry Redwater Rural Water service area vary from a low of 2.5 acres/animal unit month (a/aum) to 7.0 a/aum. The grazing rate range is due to soil types, topography, rainfall, and range condition. Based on a 6 month grazing season, animal unit (1000#cow/300#calf) requirements are 15 acres to 42 acres per animal unit (au). The majority of the pasture land in this area is in the 21 a/au to 42 a/au.

For the purpose of this study, we will use 16 gallons per day per animal unit and will determine cost in a cost per 100 head. The estimated volume of water per month for 100 head is 48,000 gallons.

A hydraulic model was performed on the proposed system using the University of Kentucky's Pipe 2000 software. This involved both a steady state and branch line analysis of the proposed users. The results of that analysis were used to size the pipe components and determine an estimate of probable cost.

The estimated municipal and rural water usage needs are presented in Table 6.3.1.

Table 6.3.1 Estimated Water Use by County

ESTIMATED WATER USAGE BY COUNTY								
Based On:	125	GPCD				*Water Usage*		
County	**2000**		**2001**		**2002**		**2003**	
GARFIELD	1,268	158,500	1,263	157,900	1,245	155,600	1,241	155,125
McCONE	1,966	245,750	1,901	237,625	1,842	230,250	1,814	226,750
DAWSON	9,044	1,130,500	8,919	1,114,900	8,738	1,092,250	8,245	1,093,125
RICHLAND	9,626	1,203,250	9,445	1,180,625	9,276	1,157,500	9,177	1,147,125
PRAIRIE	1,188	148,500	1,214	151,750	1,187	148,375	1,166	145,750
	Totals	2,886,500		2,842,800		2,783,975		2,767,875

Major population centers in the study area are Circle, Jordan, Richey and Lambert. Using the 125 gallons per capita per day usage factor, an estimated usage can be generated. These estimated values are shown in Table 6.3.1.

Table 6.3.2 - Estimated Average Water Use by Populated Communities

ESTIMATED AVERAGE WATER USAGE BY CITY OR TOWN IN GALLONS PER DAY								
Use:	125	GPCD						
City/Town/Community	**2000**		**2001**		**2002**		**2003**	
Jordan	361	45,125	360	45,000	354	44,250	353	44,125
Circle	640	80,000	619	77,375	603	75,375	593	74,125
Richey	189	23,625	185	23,125	180	22,500	180	22,500
Lambert	160	20,000	150	18,750	151	18,875	155	19,325
	Totals	168,750		164,250		161,000		160,125

Table 6.3.3 - Average Water Demand for Populated Communities*

AVERAGE WATER DEMANDS BY CITY, TOWN OR COMMUNITY						
City/Town/Community		**2000**	**2001**	**2002**	**2003**	**Average**
	Jordan	64	64	62	62	63
	Circle	112	108	106	104	105
	Richey	34	34	32	32	33.5
	Lambert	28	26	26	26	26
Total		238	232	226	224	227.5

* Based on 720 minutes per day (12 hour day)

Each rural user is estimated to use an average combined instantaneous flow of 0.7 GPM peak flow. For example, 902 rural users will have a combined peak flow of 631 GPM. The average daily volume of water based on the 542 rural houses and 110 cabin sites at an average of 2 people per hook-up and 125 gpcd yields 163,000 gallons.

3. <u>Community Demands</u> The existing public water supply systems of Jordan, Circle, Richey and Lambert were contacted to obtain water usage records and if they were not able to provide them, the amount of annual usage that is reported to the DEQ was used.

   Water demand for the proposed project was based on the community's maximum daily usage and the amount of storage facilities available in the community. Supply requirements were determined to provide the community with water using their own storage facilities for 24 hours on their maximum day.

   The communities would be considered a bulk user. They would buy water from the DRWA at the point of their connection to the regional water system. The community would be responsible for the distribution from that point to their consumers.

4. Combined Flows The estimated combined rural and community usage is shown in Table 6.3.5. The peaking factor is estimated to be 250 gallons per day per capita for communities. The peak days will be met over a 24-hour period. Instantaneous flows will be met by a combination of rural water storage reservoirs and the individual storage reservoirs of each community.

   Communities with storage use higher instantaneous flows, but with storage the supply can be spread over a 24-hour period. See Table 6.3.5.

Table 6.3.4
Equivalent Dwelling Units

Community	Population	Calculated Peak Day 250 GPDC	Peak Flow 24-hour GPM	EDU
Circle	644	161,000	112	360
Richey	189	47,250	33	147
Lambert	142	35,500	25	80
Jordan	364	91,000	63	250
Totals	1,339	334,750	233	837

5. Water Demands (Quantity and Delivery Rate) Summary

Table 6.3.5

Type	Average Day Volume (Gallons)	Peak Day Volume (Gallons)	Delivery Rate (GPM)
Community	167,400	334,750	230
Rural	163,000	326,000	230
Pasture Taps	360,000	720,000	450
Totals	690,400	1,380,750	910

6. Feasibility Study Assumptions on Water Treatment and Production

Treatment Rate	910 GPM
Average Day	655,000 Gallons
Peak Day	1,310,400 Gallons
Annual Use	239,000,000 Gallons = 734 Acre Feet
Annual Water Flow in the Missouri River	8,000,000 Acre Feet
% of Available Water to be Used	0.01%

6.4 WATER TREATMENT PLANT / INTAKE OPTIONS

Water Treatment Plant New Construction

6.4.1 Groundwater

The existing water treatment plants in Richey, Lambert and Circle are using an iron and manganese removal pretreatment system, followed by membrane filtration to lower levels of fluoride and sodium. These plants would be decommissioned, and the structures potentially used to house pumping stations. As was discussed in Section 2, the groundwater in the study area does not have the yield or quality to be developed into a primary source of water for a regional water system.

6.4.2 Surface Water

There are currently no large-scale water treatment plants within the study area using surface water. The most likely surface water treatment process for this project would be a conventional sedimentation, flocculation and then mixed media filtration. This is typical of the existing surface water treatment facilities in Glasgow, Culbertson and the Town of Fort Peck. There have been great advances in microfiltration of surface water that may provide to be more advantageous once full scale pilot studies are completed during the design phase of the project.

The DRWA does not currently have any surface water rights but has had discussions with the DNRC regarding the process to acquire the necessary water rights for the project. The exact location of the point of withdrawal has not been finalized. It is anticipated that the water source will be in the Big Dry Arm of Fort Peck Reservoir and a new water right appropriation could be granted to the DRWA once a diversion point is selected. In discussions with Bureau of Reclamation personnel the final water right appropriation is not a requirement to proceed with Congressional action on getting the project authorized. As the project advances through the process there will be several more studies on the environmental and engineering issues for the project. The final water right must be in place before the final design stage of the system can be completed. There is a possibility that an existing surface water treatment plant located in Culbertson, MT may be available as an option depending on how the Dry Prairie Regional Water System will be providing water to their users on a permanent basis.

A surface water treatment plant to serve DRWA will be designed to meet the requirements of the Montana Department of Environmental Quality and the safe drinking water standards. The total final capacity design is based upon new storage capacity, peak flow versus average daily flow, storage in the system and at each community. Each of these items will be sized as part of the design phase. The feasibility level assumptions set 910 gpm as the sizing for full build out of the water treatment facility.

Raw water from Fort Peck Lake and the Missouri have been successfully treated and used in several large communities in Eastern Montana (Glasgow, Culbertson, Town of Fort Peck). Therefore, it is assumed for the purpose of this study that the surface water can be treated satisfactorily by several treatment methods (micro-filtration clarifier or equivalent, media-filtration with clarifier or equivalent, and conventional treatment) to meet Federal Safe Drinking Water criteria. These alternatives will be investigated in more detailed design-level studies, outside the scope of this document, and a selection will be made based on costs and ability to produce a high quality, dependable finished water supply.

Water treatment at the regional plant will involve the removal, via methods including filtration, of suspended particles from the raw water, as well as disinfection of the filtered water to remove microorganisms. The following processes are potentially available within the proposed treatment plant, subject to requirements to produce a finished product meeting Federal Safe Drinking Water Standards and public opinion respecting matters such as fluoridation and methods of disinfection:

- pre-sedimentation;
- flocculation;
- sedimentation;
- gravity filtration;
- pH modification;
- corrosion inhibitors;
- disinfection (chlorination with consideration of ozone for partial disinfection);
- fluoridation (optional).

The regional water treatment plant will be designed such that it can be modified to a nano-filtration or other comparable membrane process to remove contaminants not currently regulated. The use of barrier type treatment, such as membrane, is a process not dependent on other chemical reactions and can be used on all sizes of contaminants. The contaminants can be particulates or in solutions and a properly sized membrane will remove them all.

Table 6.4.1 summarizes the general process of treating water delivered from the raw water intake in Fort Peck Lake to the finished water in the clear well before entry to the distribution system.

Pre-Sedimentation – Off Lake Storage –

The intake pumps from the lake will be used to pump water into several large sedimentation ponds which will provide a means to allow some large solids loading to be settled out of and provide a known quantity of water during low lake level periods.

Mixing, Coagulation and Flocculation –

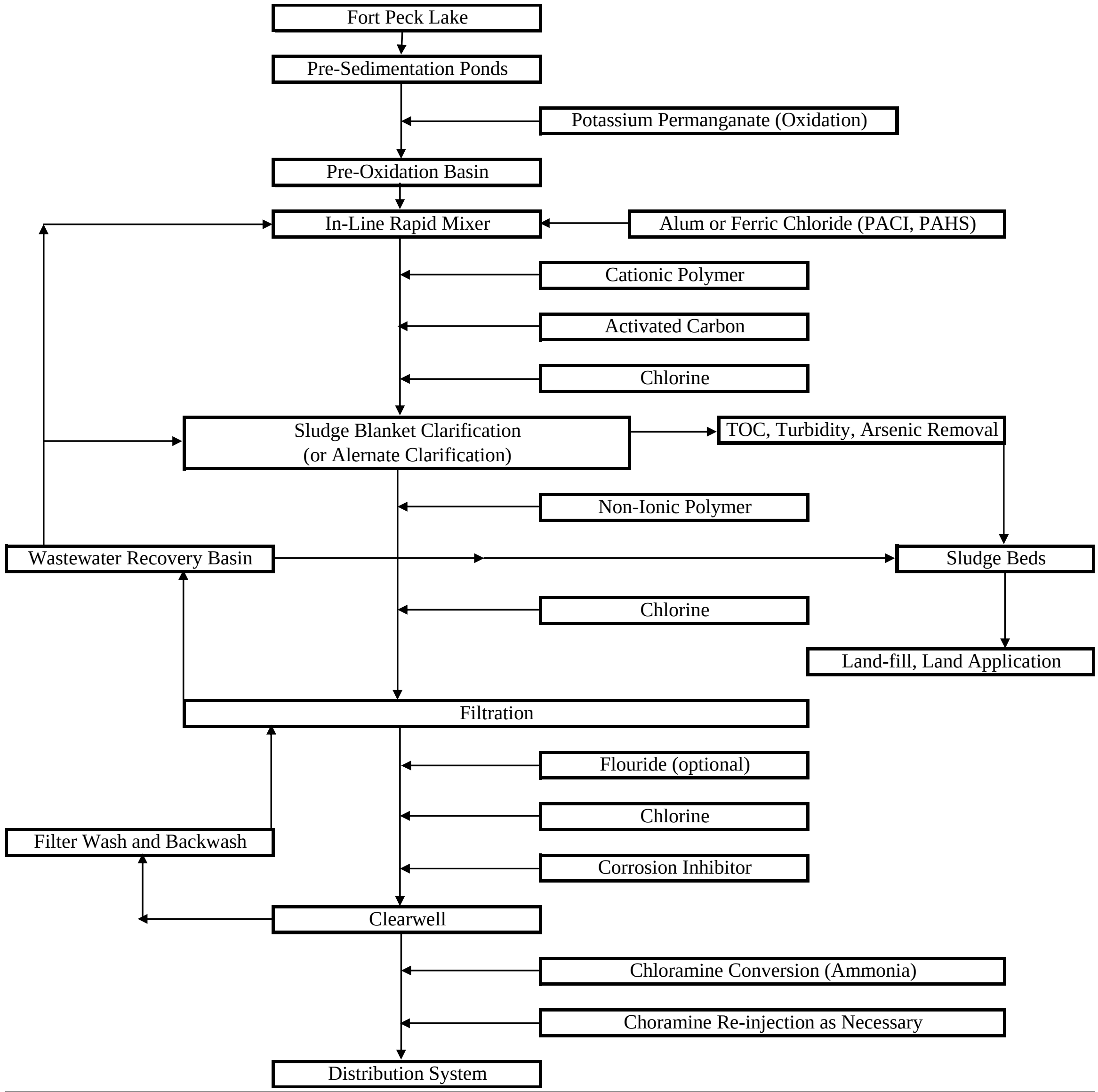
Mixing, as referred to above, is a process to uniformly disperse chemicals added for coagulation through raw water taken at the intake and after it has settled in the pre-sedimentation ponds. Coagulation is the addition of chemicals that destabilizes the forces among particles that keep them apart and promotes their attachment to one another for removal as the treatment process progresses. These particles may be silts, clays, and organic matter the remains suspended in the source water. Enhanced coagulation will be designed to remove organic material to comply with the disinfectant byproducts rules. This will be accomplished by increasing chemical dosage and/or pH adjustment. Ferric chloride is the preferred coagulant by other surface water treatment plants in the region as a means of achieving arsenic removal. The most common coagulant, absent the presence of arsenic, is alum (aluminum sulfate).

Flocculation is the process that settles suspended particles and follows the addition of coagulation chemicals. In a conventional water treatment plant, flocculation occurs in sedimentation basins prior to the clarification process. Agents that can aid in the flocculation process include cationic or anionic polymers, activated silica and bentonite.

The rapid mixing, coagulation and flocculation processes may be combined in sole source type devices. Pilot studies will be undertaken to determine whether separate facilities for rapid mixing, coagulation and flocculation consistent with a conventional water treatment plant will be utilized or whether these processes will be combined in a sole source clarifier.

Alum or ferric chloride would be added to the rapid mixer for coagulation. Ferric chloride will be used if needed to enhance arsenic removal. Alum will be used if arsenic can be successfully removed with turbidity. Polyaluminum chloride (PACL) and partially neutralized alum-polyaluminum hydroxyl sulfate (PAHS) are alternative coagulants. Selection of a final coagulation will be based on effectiveness of turbidity reduction, arsenic removal, organics removal, impact on disinfection byproduct reduction, sludge production, pH and corrosion impacts, ease of handling and storage, and costs.

TABLE 6.4.1
CONVENTIONAL WATER TREATMENT PROCESSES



<u>Clarification</u> –

Clarification will reduce the remaining suspended sediments, including organics, after the coagulation and flocculation processes, or combined with these processes, before filtration to. Alternatives for clarification and include membrane filtration and media filtration. Membrane filtration may include microfilters or nano-filters. The latter will remove particles sizes that are 1,000 times smaller than the particle sizes removed by microfilters. This level of removal is not considered necessary for this project.

Before entering the clarifier, cationic and non-ionic polymers, activated carbon and the first stage of chlorine injection for disinfection will be provided as

necessary. The principal difference in the water treatment process discussed here and a conventional treatment process is the substitution of sludge blanket clarification (or another alternative clarification system) for conventional flocculation/sedimentation. The clarifier will remove suspended organic carbon (a precursor to formation of disinfectant byproducts), turbidity and suspended arsenic. These contaminants will be delivered to sludge beds and thereafter to landfill or land application, depending on compliance requirements for the final concentrations of constituents that are produced.

Detailed sizing based on recommendations from manufacturers and a review of other facilities treating similar waters should be performed before a clarifier system is selected. Pilot testing may be warranted since this process does not work well with all types of water and contaminants. Other types of alternative flocculation/sedimentation systems should be evaluated, including:

- Solids contact clarification.
- Conventional sludge blanket clarification.
- Contact clarification.
- Ballasted clarification.

It is not contemplated at present that arsenic in the waste sludge will be of sufficient concentration to cause concern with any disposal method.

<u>Filtration</u> –

From the clarifier water will be delivered to gravity, micro (membrane) or media filters.

<u>Disinfectants and Disinfectant Byproducts</u> –

Alternatives for disinfectants include chlorine, chlorine dioxide, chloramines, ozone, ultraviolet light and combinations thereof. Because residual levels of disinfectant are required in the finished water, any use of ozone or ultraviolet light must be followed by chlorine or chloramines to complete the disinfection process and provide a residual.

Ultraviolet light was not considered here. Some considerations may be given to ozone, which is gaining in popularity in combination with chloramines (a secondary disinfectant). This combination generally produces better taste than chlorination. Ozone is particularly effective in achieving log 3 (99.9%) removal or inactivation of *Giardia Lambia* cysts and log 4 (99.99%) removal or inactivation of viruses.

Chloramines are formed from the reaction of chlorine and ammonia in the following steps:

(1)	$Cl_2 + H_2O$	→	$HOCL + H^+ + Cl$	
(2)	$NH_3 + HOCl$	→	$NH_2Cl + H_2O$	monochloramine
	$NH_2Cl + HOCl$	→	$NHCl_2 + H_2O$	dichloramine
	$NHCl_2 + HOCl$	→	$NCl_3 + H_2O$	nitrogen trichloramine

The competing reactions in the second step are dependent on pH, the chlorine: ammonia nitrogen (Cl_2:N) ratio, temperature and contact time. Monochloramine is the preferred form due to its disinfectant properties and minimal test and odor.

Chloramine residuals may be maintained for as many as 21 days or significantly longer than chorine residuals. Thus, chloramines are of considerable interest in regional water projects such as the DRWA project that has long distance between the points of initial disinfection and the end-users. The number of re-injection points to maintain residual concentrations of disinfectant can be minimized. Chloramines form very few disinfection byproducts and are superior to chlorine in maintaining low levels of total trihalomethanes (TTHMs) and haloacetic acids (HHAs). Trihalomethane reductions of 40 to 80% are reported when chlorination was replaced with chlorimination. Haloacetic acids may not be as effectively controlled by chloramines. Contact time for chloramines is significantly greater than with chlorine.

Disadvantages of chloramines include requirements to remove chloramines before use in kidney dialysis. This will require attention in the project area where diabetes is so prevalent among the numbers of the Assiniboine and Sioux Tribes. Chloramine will bind to iron in the red blood cells during the dialysis process. Treatment centers can remove chloramines ahead of the dialysis process. Although not considered as aggressive as chlorine, chloramine contributes to bladder and other cancer risks.

Nitrification is a risk, particularly in warmer waters. Ammonia from chloramines is converted to nitrite and them to nitrate. This can deplete the chloramine residual and increase bacterial production. Chloramine can also lead to accelerated corrosion and degradation of gaskets and some metals in distribution systems. Temperature, pH, ammonia concentration, organic compounds, detention time and the time that water may stand in dead-end lines or other parts on the distribution system are among the factors that require attention with use of chloramines.

6.5 BOOSTER STATIONS AND ON-GROUND RESERVOIRS

Several booster stations will be required to boost pressure in the system. Each booster station will most likely have some storage available in an underground concrete reservoir. The pumps will be sized to provide flow for its service area.

Several on-ground reservoirs will be required to provide water storage for the outer edges of the project area. These reservoirs will be placed where needed to provide water storage, which will decrease the size of pipeline needed to feed the outer areas of the project. A few in-line booster stations will also be required to booster the pressure in the pipelines located in the outer areas of the project.

6.6 DISTRIBUTION LINES

Hydraulic modeling was completed for the proposed system, using the University of Kentucky's Pipe 2000 software. This involved both a steady-state and branch line analysis of the proposed users. The results of those analyses were used to size the pipe components. Results are included in the Appendix. A typical pipe line layout schematic is shown below.

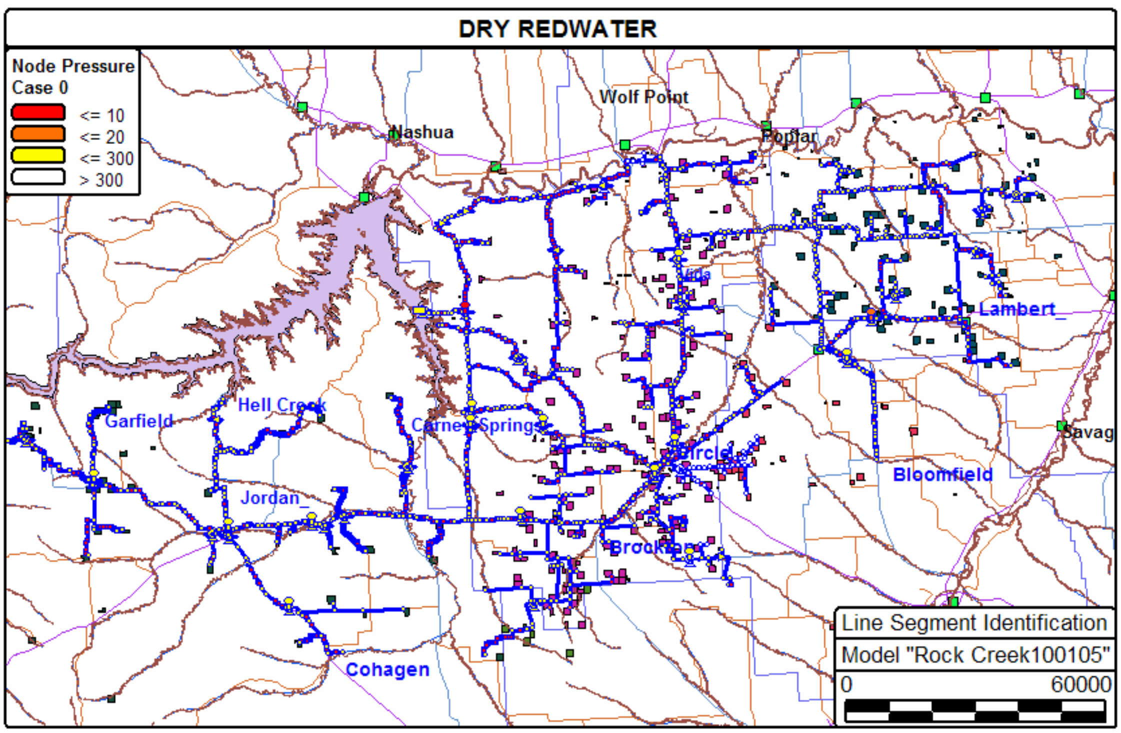


Figure 6.6.1
Mode Segment Map

6.6.1 Model Conventions

For the initial model setup, water treatment plants are indicated by reservoirs. The reservoir(s) provide an initial constant hydraulic grade line elevation that allows the model to run and check for errors. The Dry Redwater Rural Water System will deliver water to communities at a point near an existing storage tank, indicated on the model by a small tank symbol. It will be the community's responsibility to distribute the water to it's customers from the tank through their

existing distribution system. The communities will be responsible for the continued maintenance and upkeep of their own distribution systems.

Individual and community demands are imposed on nodes. Demands vary at different nodes, depending on the number of users and the type of demand. Figure 6.6.1.1 illustrates the major symbols used in the distribution modeling system.

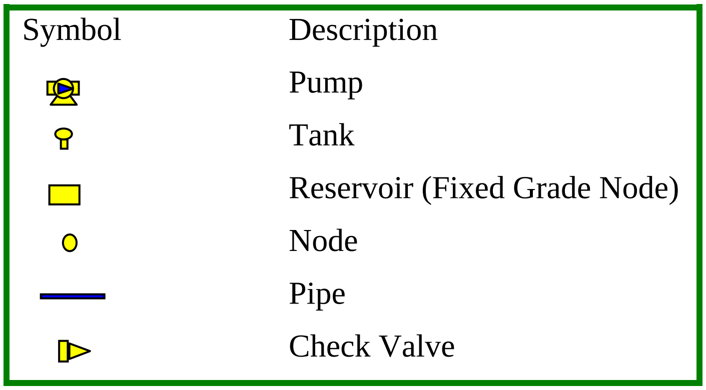


Figure 6.6.1.1 - Major Modeling Symbols

6.6.2 Materials

Material selection and material and installation costs are incorporated in all of the Dry Redwater models. The final selection of the type, pressure rating and size of the materials depends on the final configuration of each of the models examined in this feasibility study. The costs for the various classes and ratings of pipe materials were obtained from various suppliers. Costs for the installation of the pipe and appurtenances were obtained from reputable contractors experienced in the installation of rural water pipelines and industry publications. A listing of the numerous pipe classes, rating and diameters used in the Dry Redwater distribution model are shown in Table 6.6.2.1.

Table 6.6.2.1 - Pipe Material, Rating and Roughness

Material and Class	Rating	Nominal Diameter	Outside Diameter	Inside Diameter	Roughness	10-year Roughness	Wave Speed
pvc D2241	160	1.5	1.754	1.5	140	138	1180
pvc D2241	160	2	2.193	2	140	138	1179
pvc D2241	160	2.5	2.665	2.5	140	138	1176
pvc D2241	160	3	3.23	3	140	138	1183
pvc D2241	160	4	4.154	4	140	138	1181
pvc D2241	160	5	5.135	5	140	138	1181
pvc D2241	160	6	6.115	6	140	138	1182
pvc D2241	160	8	7.961	8	140	138	1186
pvc D2241	160	10	9.924	10	140	138	1181
pvc D2241	160	12	11.77	12	140	138	1181
pvc D2241	200	1.5	1.9	1.52	140	138	1314
pvc D2241	200	2	2.149	2.2	140	138	1317
pvc D2241	200	2.5	2.601	2.52	140	138	1318
pvc D2241	200	3	3.166	3.2	140	138	1319
pvc D2241	200	4	4.072	4.2	140	138	1319
pvc D2241	200	5	5.033	5.2	140	138	1318
pvc D2241	200	6	5.993	6.2	140	138	1319
pvc D2241	200	8	7.803	8.2	140	138	1469
pvc D2241	200	10	9.728	10.2	140	138	1316
pvc D2241	200	12	11.538	12.2	140	138	1316
pvc D2241	250	1.5	1.656	1.55	140	138	1536
pvc D2241	250	2	2.095	2.55	140	138	1470
pvc D2241	250	2.5	2.537	2.56	140	138	1468
pvc D2241	250	3	3.088	3.5	140	138	1469
pvc D2241	250	4	3.97	4.5	140	138	1469
pvc D2241	250	5	4.909	5.5	140	138	1468
pvc D2241	250	6	5.845	6.5	140	138	1469
pvc D2241	250	8	7.609	8.5	140	138	1469
pvc D2241	250	10	9.486	10.5	140	138	1468
pvc D2241	250	12	11.25	12.5	140	138	1486
pvc DR14	200	10	9.514	10.21	140	138	1624
pvc DR14	200	12	11.314	12.21	140	138	1623
pvc DR18	150	10	9.866	10.22	140	138	1426
pvc DR18	150	12	11.734	12.22	140	138	1426
pvc DR25	100	8	8.326	8.1	140	138	1205
pvc DR25	100	10	10.212	10.1	140	138	1205
pvc DR25	100	12	12.144	12.1	140	138	1205

1) The distribution system will be constructed in a branch type layout. Due to the cost and size of the system, looping is not feasible in most of the regional service area, but in some sections, looping will be feasible due to the density of the users. The system will be constructed of PVC pipe ranging in size from

2” to 12”. The PVC will be Class 160, Class 200 or Class 250. Based upon the necessary peak working pressure in each pipe.

2) Valves will be placed at major junctions of the pipelines to provide for repairs without affecting service to other areas.

3) Air release valves will also be necessary at high points in the lines to release trapped air. An estimated amount of air release valves are planned at this time. It is assumed that due to the variation of terrain in much of the project area that an air release valve will be required every 4 to 7 miles, approximately.

4) Curb stops will be installed within 25 feet of the users. The user will be responsible for installing piping from their curb stop to their residence.

5) County roads, highway and railroad crossings will be done by boring underneath these structures so that no disruption of traffic will occur. Permits will be required for each crossing. The paved roads and railroads will have a steel casing around the pipe. Gravel roads will not have steel casing.

6) Wetland and stream crossings. There are numerous scattered wetlands of the temporary (PEMA), seasonal (PEMC) and permanent types. Crossing of these wetlands will be accomplished by boring under them. The possibility of trenching through wetlands will be subject to the type of wetlands, the restoration of basin contours, trench compaction, seasonal limitations to help preserve the integrity of the wetlands and the conditions listed in the required permits.

   There are numerous intermittent streams and perennial streams in the project area. Any crossing of intermittent streams will follow the requirements of the regulatory agencies (Fish, Wildlife and Parks, the Corp of Engineers, DNRC and DEQ).

6.7 TREATMENT FACILITY LOCATION ALTERNATIVES CONSIDERED

The DRWA project covers a large area and has many potential sites for locating the water treatment facility. The pipeline routes are fixed by user density and right-of-way issues. The location of the water treatment facility will affect the size and number of pump stations required, which in turn will affect the capital and operational cost of the project. This report summarizes work done on evaluation of several locations for the water treatment facility.

6.7.1 Circle Water Treatment Plant

The Circle Water Treatment Plant model assumes that all of the finished water is produced by the Circle Water Treatment Plant. The plant would be converted from a

groundwater treatment plant to a surface water treatment plant. A raw water pump station, located on the Missouri River would pump raw water to the Circle Treatment Plant. Pump Stations and reservoirs will be located throughout the distribution system as necessary to maintain and regulate pressure. The raw water pipeline will parallel the finished water pipeline from the Missouri River near Wolf Point to Circle. The core pipeline system, the location of the intake and the Circle Water Treatment Plant are shown in Figure 6.7.1.

The advantage of this system is that the existing Circle Water Treatment Plant building, clear well and disinfection facilities, will be utilized as the water treatment plant for the entire Dry Redwater system.

The disadvantages will be that the existing filtration system in the Circle Water Treatment Plant will need to be modified to treat surface water versus groundwater and the need to construct parallel piping from the Missouri to Circle.

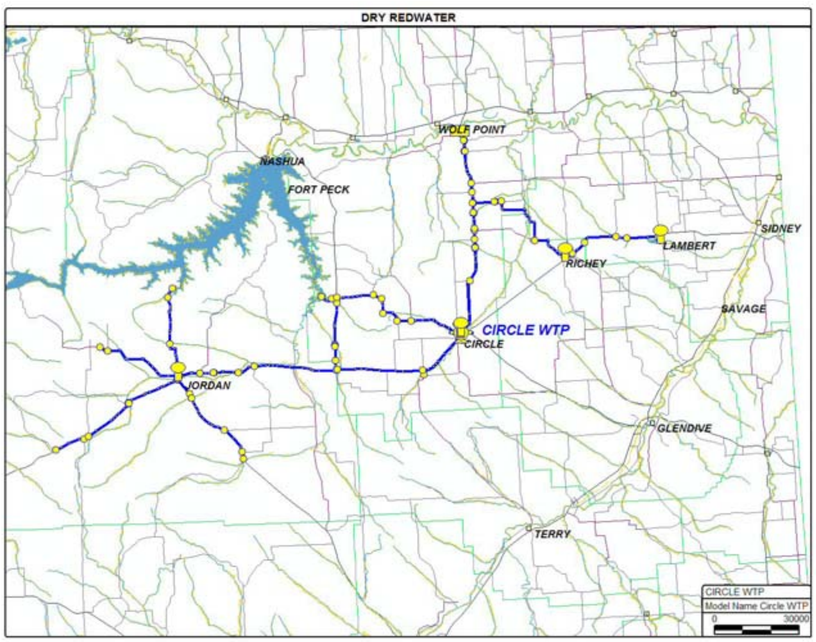


Figure 6.7.1 - Circle WTP Model

6.7.2 Nelson Creek Water Treatment Plant (Big Dry Arm Intake Location)

The feasibility study has evolved over the past 2 years and as a result some of the project descriptions have changed from the initial study to the final study. The feasibility study during the initial stages located water sources in Garfield County and McCone County. The original water treatment site at the Nelson Creek location in the Big Dry Arm represented a water treatment facility in the center of the service area; as the project evolved, the location has moved between Fort Peck Dam and Nelson Creek. The current preferred location is near Bear Creek in the Big Dry Arm.

The Big Dry Arm model assumes a water treatment plant will be built near the proposed coal-fired electrical generation plant. Raw water will be withdrawn from the Fort Peck Reservoir and pumped to the location of the new Big Dry Arm water treatment plant. A possibility exists that the Dry Redwater system may be able to work in conjunction with the power plant and share in the construction cost of a raw water pipeline that would supply water to both the Dry Redwater Water Treatment Plant and the coal fired electrical generation plant. Potential locations of the Big Dry Arm Treatment Plant are shown in Figure 6.7.2.

Advantages of this system are the central location of the Water Treatment Plant and, the apparent availability of a highly reliable raw water supply. Water from the Fort Peck Reservoir is usually much cleaner than water from the Missouri River, and therefore easier to treat because of the lower initial turbidity levels. If the electrical generation facility were to be constructed, Dry Redwater may be able to share in the cost of the generation facility's raw water pipeline and obtain its raw water from a mutual use pipeline.

Disadvantages of this alternative are the possibility that the generation company may be sold in the future and if Dry Redwater were to be a co-user of the raw water transmission main, new contracts or mutual use agreements would have to be negotiated. There is also the possibility of the generation facility ceasing operation and Dry Redwater having to take over the operation and maintenance of a large diameter water main and the associated facilities.

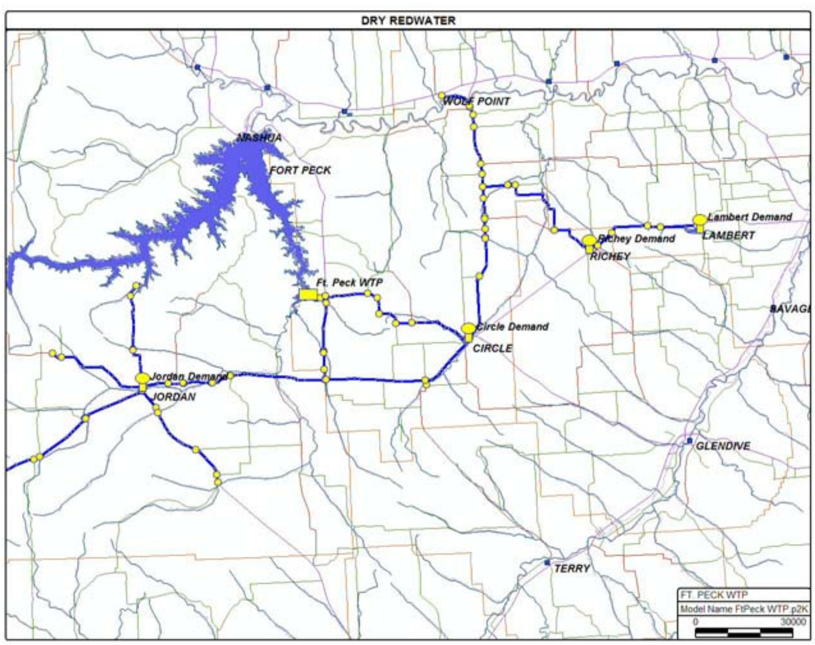


Figure 6.7.2 – Big Dry Arm WTP Model

6.7.3 Jordan Water Treatment Plant

The Jordan Water Treatment Plant model assumes a water treatment plant located either in Jordan or at Hell Creek. The advantages of this location are similar to the Fort Peck Water Treatment Plant in that there would be a highly reliable source of raw water available to Dry Redwater. Disadvantages to this system are that the water treatment plant would be located at the end of the system, requiring over 55 miles of transmission main to provide water to Lambert from the Hell Creek site. The locations of the Jordan Water Treatment Plant options are shown in Figure 6.7.3.

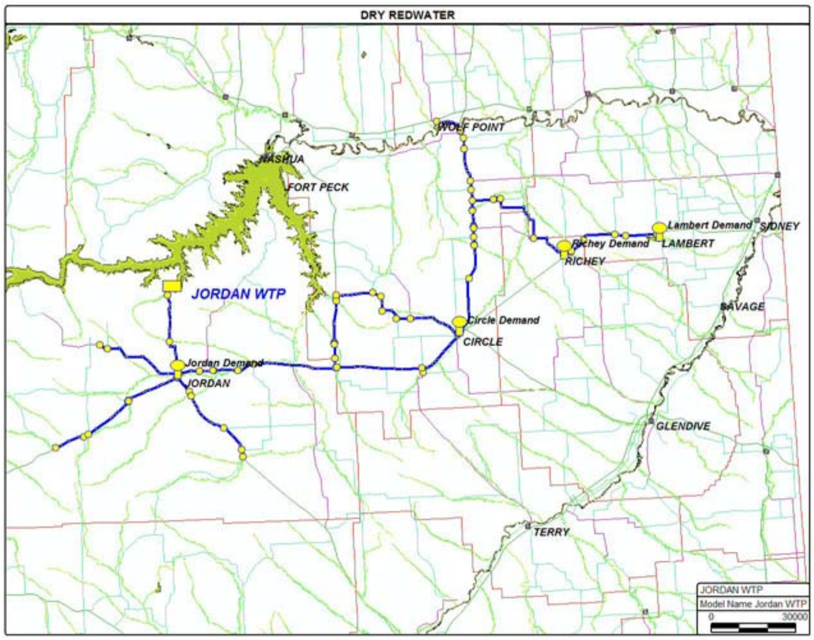


Figure 6.7.3 - Jordan WTP Model

6.7.4 Circle – Jordan WTP

The Circle – Jordan Water Treatment Plant model assumes two smaller water treatment plants located at Circle and near Jordan. The advantage of this model is that each water treatment plant will serve approximately one-half of the service area. Having two water treatment plants also will provide some measure of redundancy in the event one of the treatment plants had to be taken out of service for an extended period of time. Normally closed interconnection valves will isolate the two systems except during the periods when one of the water treatment plants needed to be shut down for maintenance or repairs at which time the interconnecting valves would be opened, allowing the system to continue to operate. Operation under this condition will be at lower pressures while system maintenance was being completed.

Disadvantages include the need for the raw water transmission main from the Missouri River near Wolf Point to the Circle water plant and the additional cost for operation and

maintenance for two water treatment plants. The location of the Circle and Jordan Water Treatment Plants is shown in Figure 6.7.4.

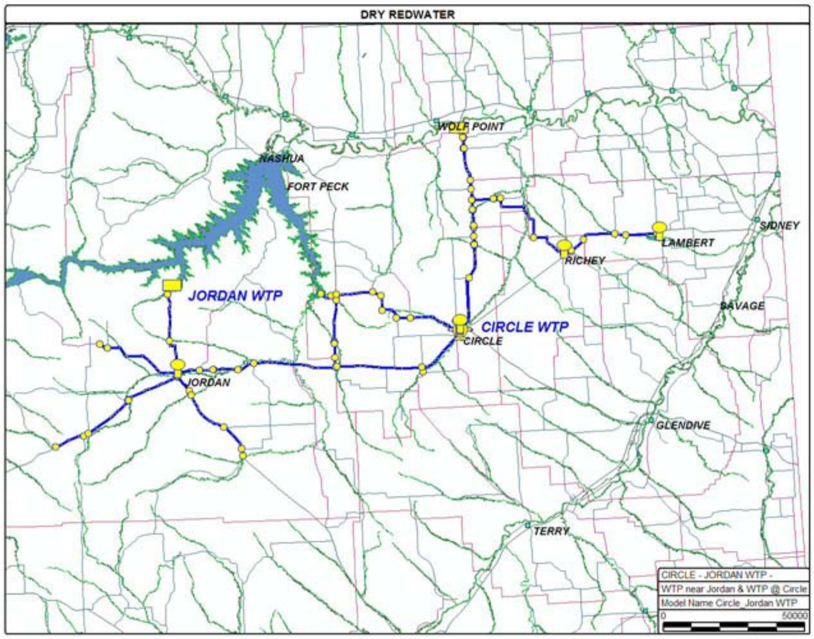


Figure 6.7.4 - Circle - Jordan WTP Model

6.7.5 West Garfield WTP

The West Garfield water treatment plant would be located northwest of Jordan along the Fort Peck Reservoir. The advantage of this location is that the water treatment plant would be located at a higher elevation than a majority of the Dry Redwater core distribution system. The Fort Peck Reservoir also provides a highly reliable source of raw water. Being located at a higher elevation could potentially allow most of the system to operate under gravity flow conditions, minimizing the need for pressure boosting stations. The proposed location of the Garfield WTP is shown in Figure 6.7.5.

Disadvantages of this location are the possibility of not being able to construct the water treatment plant or a raw water pipeline and pumping station within the boundaries of the Charles M. Russell Wildlife Refuge. An additional disadvantage would be the miles of large diameter pipeline that would need to be constructed from the water treatment plant to provide sufficient water to communities east of Jordan, namely Circle and Richey.

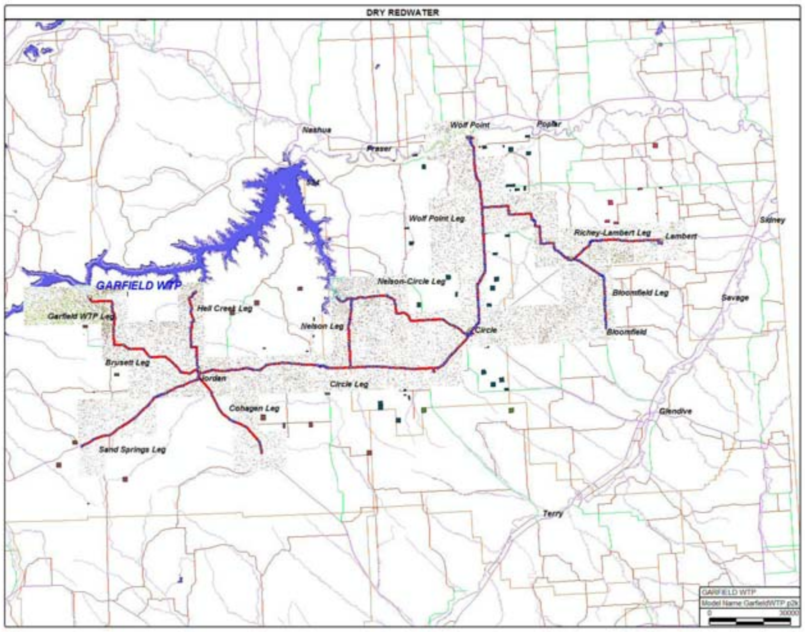


Figure 6.7.5 - Garfield WTP Model

6.7.6 Determining the Final Water Treatment Plant Location

Before any of the previously described models can be selected as the best model, numerous other factors and components must be evaluated. Transmission main diameters will be determined by the location of the water treatment plant and the associated downstream demands. The location of the water treatment plant and the elevation of the plant will also play a significant part in determining the number of pumping stations and storage reservoirs that will be needed along the core pipeline.

Energy costs and the location of electrical power transmission mains capable of supplying sufficient electrical energy for the pump stations played a significant role in the ultimate location of the water treatment plant and the associate pumping and storage stations. In Chapter 8 all of these factors were used to select the most preferred location.

6.8 CONSTRUCTION METHOD AND TIMING

1) The method of pipe lying proposed is dependent upon the size of pipeline, soil conditions and contractor's abilities.
    - 4" or smaller will be installed by plowing operation, trenching or backhoe.
    - Larger than 4" would be by trenching or backhoe.

2) Proposed project development schedule:

The feasibility report is the first step in a long process to get a regional water system constructed and providing water to the users. The following is a brief outline as to the steps still needed. The most important step is to become authorized by Congress which then allows the DRWA the ability to secure Federal funds.

- DRWA becomes a Regional Water Authority
- The feasibility study is utilized as a tool to help the Montana Congressional Delegation secure project authorization (FY 2007)
- The DRWA needs to apply for continuing operating funds from the 2007 Montana Legislative Session
- Once Federal authorization is received the list of requirements will be provided an will include:
    - i. Environmental assessment and cultural resource studies
    - ii. Additional engineering studies
    - iii. Final engineering report prepared and value engineering by the Bureau of Reclamation
- Final water rights secured
- Start of design process of 1st Phase of the construction project
- Complete the design and let construction bid on Phase I

These items are projected to be completed by 2010.

6.9 ENERGY REQUIREMENTS

The estimated energy requirements for a project of this type are approximately 5.65 mwh per million gallons with an annual requirement of 1,350 mwh.

The figures were estimated by analysis of the existing rural water system energy usage/year. The kwh per 1 million gallons was calculated than extrapolated to this usage by multiplying the kw/1mg times the 239 million gallon estimated usage for DRWA.

A 3-phase 460 volt supply is adequate for the majority of facilities a rural water system.

The projected cost per kilowatt of power is $0.07 based on information from McCone Electric Coop. This is based on receiving no special energy rate from either the Western Area Power Administration or the area rural electrical services. Based on the energy cost of $0.07 and the 1,350 mwh needed, the annual electrical cost is estimated at $94,500 per year.

6.10 OPERATION, MAINTENANCE AND REPLACEMENT COSTS

The project will require a staff of 3 full-time and 4 part time-employees to operate and maintain the water treatment facility, the various booster stations and the pipeline. The bulk users (the towns and water district) will have additional costs to maintain their water storage distribution systems.

6.10.1 Water Treatment / Booster Station Operation / Maintenance (for all users)

	Cost
a) Salaries	$165,000
b) Chemicals	$95,000
c) Miscellaneous Supplies, Etc.	$75,000
Total Operational Costs of WTP/Booster Station	$335,000

6.10.2 Pipeline Maintenance (for Rural users only)

	Cost
a) Salaries	$60,000
b) Equipment	$40,000
c) Miscellaneous Supplies/ Parts	$50,000
Total Costs of Pipeline Maintenance	$150,000

6.10.3 Replacement Budget

	Cost
a) WTP / Booster Stations (all users)	$55,000
b) Pipeline / Fittings (rural users)	$20,000
Total	$75,000

6.10.4 Summary of Costs of Operational Maintenance and Replacement

	Fixed
MAINTENANCE AND REPLACEMENT WTP / BOOSTER STATION (all users)	
a) Electricity	$94,500
b) Operation and Maintenance	$335,000
c) Replacement	$55,000
Totals	$484,500
PIPELINE MAINTENANCE (rural users)	
a) Operation and Maintenance	$150,000
b) Replacement	$20,000
Totals	$170,000

These operational costs will be very similar, regardless of the location of the water treatment facility. The terrain, availability of electrical service and the distance to be pumped to serve the majority of users will cause an increase in the construction costs which will help determine the most cost effective alternative discussed in Chapter 8.

6.10.5 Operation and Maintenance Connecting to Fort Peck Tribe System and Purchasing Water

Costs of purchasing water from Fort Peck Tribes and operating a booster station at the connection point.

Costs of treated water at connection point - $2.00 / 1000 gallons as provided by Tom Escarsaga at Fort Peck Tribes.

$2.00 / 1000 x 229,000,000 gallons = $458,000 annual water cost.

Summary of costs of operational maintenance and replacement with purchasing water from the Tribes.

	Fixed
MAINTENANCE AND REPLACEMENT / BOOSTER STATIONS (all users)	
a) Electricity	$62,000
b) Operation and Maintenance	$255,000
c) Replacement	$30,000
Totals	$347,000
PIPELINE MAINTENANCE (rural users)	
a) Operation and Maintenance	$150,000
b) Replacement	$20,000
Totals	$170,000

Total OMR and water purchase = $975,000.

CHAPTER 7
CULTURAL AND ENVIRONMENTAL ISSUES

7.1 CULTURAL

A Cultural Resources Inventory will need to be performed by a licensed archeologist prior to the start of the construction phase. The response letter from SHPO on the feasibility level study states that *"when the specific pipeline routes, tanks and water treatment sites have been finalized…we will determine whether or not sites already exist in the area, and whether a cultural resource inventory will be needed."* The entire letter is found in the Appendix. The Class I survey will cover all sites recorded and listed in the actual State Historical Preservation Office (SHPO) for the project area where a facility or pipeline will be located, based on the completion of the MEPA/NEPA work and the results of the environmental assessment.

The archeological consulting firm will consult with the SHPO and the Bureau of Reclamation and will review the Class I inventory and indicate areas in which Class II and Class III Cultural Resources Inventories will be recommended to be performed.

The consultant for the Class II and III Cultural Resource Inventory will be instructed to survey a route, which does not impact a cultural site. This may require that the route be moved to a roadway ditch or be routed elsewhere in the section. It is possible that the proposed project could have a beneficial effect on any possible historical/archeological properties since the project will consist mainly of underground water transmission, the installation of the pipe could unearth evidence which otherwise may never be discovered. If evidence is found, work will be discontinued until the State Historical Preservation Office (SHPO) and the BOR have been notified and had the opportunity to assess the value of the discovery.

7.2 ENVIRONMENTAL ISSUES

A regional rural water system will need several levels of environmental review. An environmental assessment will be completed to determine if an environmental impact study is necessary or a FONSI (Finding of No Significant Impact) can be issued. These studies will be determined as part of the process to develop a regional water system.

7.2.1 Affected Environmental and Environmental Consequences

The area in which the proposed improvements will be constructed is a very large region in comparison to the other projects of this type. The area consists of all of Garfield and McCone and portions of Richland, Dawson and Prairie Counties. The proposed water transmission line and services will consist of approximately 1,100 miles of pipeline throughout the above-listed counties.

The present uses of land adjacent to or which may be affected by the proposed improvement are primarily agricultural or transportation in nature. Due to the size of the project, it will, at points, adjoin lands with residential, agricultural, commercial, and recreational or wetland uses, but these occurrences are not expected to be significant.

Since the proposed project will be located throughout the principally rural counties of Garfield, McCone, Richland, Dawson, and Prairie, agricultural land lies along almost the entire proposed pipeline route. The intended right-of-way for the pipeline is situated just off the rights-of-way of county roads and highways.

In these areas where the pipeline will traverse agricultural land, a small amount of land will be lost to production during that growing season but very little, if any, currently productive land will be irreversibly affected. In any case, where easements cannot be obtained on the adjacent privately owned property, the pipeline will be installed in the road or highway right-of-way if allowed by the County and MDT. If these two alternatives are not possible then pipeline will be re-routed or if no other route is possible the District, as a last resort, will use the power of eminent domain.

The proposed improvements will have a minor effect on transportation since in areas where easements cannot be obtained for private land; the pipeline will be located within the rights-of-way of the counties' roads and highways. As in the case of the farmland, the effect of the project will be felt only during the construction phase and that will be very minimal since the pipeline will be placed underground in the ditch, and road and highway crossings will be bored.

Table 7.2.1
LAND USES, CULTURAL RESOURCES AND
ENVIRONMENTAL RESOURCES AFFECTED BY THE PROJECT

		Yes	No	Uncertain
1.	Wetlands			X
2.	Wildlife Refuges	X		
3.	Parks		X	
4.	Grassland	X		
5.	Woodlands		X	
6.	Critical Habitats		X	
7.	Flood Plains		X	
8.	Prime Farmlands	X		
9.	Historical or Archeological Sites		X	
10.	Public Health or Safety		X	
11.	Aquifer Recharge Areas		X	

Wetlands: It is intended that wetlands will be avoided in order to avoid detrimental impacts upon them, as well as to avoid the difficulties presented in constructing through wetlands. Should it be discovered during the construction phase that a wetland area cannot be avoided, the DRWA Board and their engineer will work with the U.S. Fish and Wildlife Service and the Montana Department of Fish, Wildlife and Parks to keep any possible impact to an absolute minimum. The Fish and Wildlife Service will indicate if wetlands can be directionally bored or trenched through with recompaction of the soil. The project service area has less than 10% of the land categorized as wetlands based on soils surveys of the Soil Conservation Service.

Woodlands: Similar to the situation with the wetlands, all woodlands will be avoided whenever and wherever it is possible in order to avoid as much impact as possible. Should it become necessary, due to a routing change, to construct a portion of the project in or through a wooded area, the number of trees removed will be documented and reported to the Bureau of Reclamation office where it will be entered into the mitigation ledger for the overall project woodland losses. There are less than 10% of the lands categorized as woodlands.

Grassland: During the construction phase of the project, some unbroken sod (pasture land) will experience temporary loss of vegetation due to the excavation required during installation of the pipeline. All disturbed grassland areas, both native and non-native, will be re-seeded following the construction. This land use is the most prevalent in the service area.

Prime Farmlands and Irrigation: During the construction phase, some 20 foot wide areas of crop land will be disturbed due to the installation of the pipeline. The crop on that piece of land will be lost for that growing season. The sites on which above-ground project facilities are to be located will be submitted to the Natural Resources and Conservation Office (NRCS) in each of the counties for a Farmland Conversion Impact Rating.

The proposed project will be serving communities in addition to rural residents. When a community is served, the water transmission line will be connected to the existing municipal distribution system. The work in this situation may have some effect on residential, commercial or industrial land uses. The effects will be kept to a minimum, and will be limited to the construction phase.

A concerted attempt to avoid all existing wildlife refuges will be made in the proposed design of the project.

AIR QUALITY

There are not expected to be measurable amounts of emissions produced by any portion of the project upon completion of the construction. A large portion of the project will consist of underground water transmission and service lines, which

will not produce any emissions. The remaining components of the project will be water treatment equipment, booster stations, water storage reservoirs, pressure reducing valves and air release manholes, all of which are non-emission producing facilities. The only permanent project components which could be emission-producing would be the heating equipment for the pumping stations and water treatment facilities. At this point, the heating is expected to be electrical; therefore no emissions are anticipated on a permanent basis.

There will be minor amounts of air emissions and dust produced during the construction phase. These emissions will consist primarily of carbon monoxide and carbon dioxide produced by the internal combustion engines of construction equipment. Also, dust will be produced by the movement of men and equipment. These emissions will be limited to the construction phase and will not have any far-reaching effects.

It should be noted that there are generally no topographic or meteorological conditions which could hinder the dispersal of any air emissions.

Since no significant air emissions expected to result from this project, no measures have been taken to control them.

WATER QUALITY

There will be no effluents or discharges expected to be associated with the proposed project facilities. The treatment reject or backwash water for the facility will be stored in a holding / sludge settling facility and final disposal will be evaporation. The primary beneficiaries, which are the communities and rural households subscribing to the system, presently have domestic wastewater which, in the case of the cities, is being treated in the existing wastewater treatment facilities of each municipality. In almost every instance, the rural households are using a septic tank and drainfield system for wastewater disposal. The proposed improvements will not noticeably increase the amount of wastewater produced by the primary beneficiaries.

SOLID WASTE MANAGEMENT

Similar to the effluents and discharges discussed above, there will not be a permanent increase in the amount of solid waste produced. There will be a relatively small increase in solid waste during the construction phase as a result of shipping crates for installed equipment, barrels for lubricants and PVC joint adhesives, etc. This waste increase will be disposed of by the completion of the construction phase. The amount of solid waste produced by the primary beneficiaries will not be affected by the proposed project.

The solid waste presently being produced by the primary beneficiaries is being disposed of in a sanitary landfill either by the communities or by a contracted

garbage hauler. The rural households solid waste is either burned or hauled to a licensed landfill. The solid waste produced during the construction phase will be hauled to a landfill site or be removed from the site by individuals as in the case of scrap or waste lumber.

Some of the solid waste produced during the construction phase will be recycled. Barrels in most cases will be returned to the distributor or manufacturer and wooden pallets will be reused.

TRANSPORTATION

The project area is presently being served by three major paved highways. U.S. Highway 200 is a major east-west thoroughfare in the central portion of the state. The highway enters Richland County on its eastern boundary and continues in a westerly direction into Dawson, McCone, Prairie and Garfield Counties where it intersects MT Highway 13 and MT Highway 24, which are a major north-south thoroughfares in the eastern portion of the state. Highway 200 continues west through McCone County. Highway 200 serves the cities of Lambert, Richey, Circle and Jordan. In addition to the above mentioned Highways, the project area is also served by State Highway 58. The secondary highways in the project area are MT Highway 201, 528, 254, 253 and 252.

The proposed project is not expected to create new or to alter any existing major traffic patterns. The proposed water transmission and distribution system will parallel the roads and highways of all five counties and will, at various locations, be required to cross the transportation facilities. When a crossing is necessary, the lines will be bored beneath the highway or railroad line and thus will not effect the functioning of that facility.

Since the proposed project will not create or alter any new or existing traffic patterns, there will be no effects to existing land uses such as residential, hospitals, schools, or recreational.

The existing capacities of the transportation facilities will not be exceeded by the project. There will be an increase in traffic during the construction phase of the project due to the moving of construction equipment, but all load limits will be observed and the increase in any one area will be short-lived. Upon completion of construction, all transportation facilities will return to normal with no permanent change.

NOISE

There are no existing major sources of noise associated with the primary beneficiaries of the project nor will there be any major noise sources associated with the project facilities upon completion. There will be a slight increase in noise levels during the construction phase resulting from the operation of the

construction equipment. Since the majority of the project will be constructed along and in county and township road and highway right-of-ways, the additional noise created by the construction equipment is not expected to be significant.

Primary land uses situated within the project area which may be slightly affected by the noise of the project are primarily agricultural and transportation, with a very small amount of residential, commercial, industrial and wildlife and wetlands areas.

WILDLIFE AND ENDANGERED SPECIES

There are various wildlife resources located in the vicinity of the proposed project such as waterfowl production areas (WPA) and lakes. These resources provide habitat for fish, birds and other wildlife. There will also be various creeks which will be avoided if possible, but if a creek needs to be crossed, consideration will be given based on the wildlife that utilize the creek.

The project should have no significant impact or effect on biological resources, but mitigation measures will be implemented to assure that the effects will remain insignificant. If there is unavoidable construction through native prairie, all disturbed native grass areas involved will be re-vegetated with species native to that particular area. If native prairie is disturbed during construction, existing topsoil will be removed and stockpiled during construction and re-spread upon construction completion. The area will be replanted with native grasses in a seed mix recommended by the appropriate state, county or local agency and approved by the landowner. Planting will be conducted in a timely manner so as to minimize the invasion of noxious or other undesirable weed species.

No significant impact to endangered or threatened species is anticipated as location and timing of construction will be coordinated with US Fish & Wildlife Services or Montana Department of Fish, Wildlife & Parks to mitigate the impact.

FLOOD PLAIN MANAGEMENT

All major portions of the proposed project including any water treatment plants, water storage tank and the booster stations will be located, when feasible, in areas where there is no flood hazard. If unable to keep any of these project components out of a known floodplain, the component will be designed so as to elevate it above the 100-year flood level or to flood proof the component.

The balance of the project, namely the pipeline and service lines will be constructed below ground and therefore will not effect or cause any increase in the duration or intensity of any flood.

The project will not support flood plain or wetland development nor will this project adversely impact flood plains or wetlands. There is no anticipated flood

hazard in relation to the National Flood Insurance Program and this activity does not conflict with state or local flood plain protection standards.

ENERGY

The proposed rural water system is located in the State of Montana, which is an energy exporting state. The State possesses abundant supplies of oil, lignite coal and natural gas which are not all consumed in the state. There are several coal fired power plants that utilize the area coal to produce electricity which is not all used in the state.

Upon completion, the DRWA regional water project will use electricity for most energy applications and there currently is an abundance of electrical energy available within the state.

Due to the nature of the project, it is not felt that the proposed rural water supply and distribution system will affect or be affected by any possible future mineral development such as coal, oil or gas exploration.

CONSTRUCTION

Various methods will be utilized during the construction phase to lessen the adverse impacts such as noise, soil erosion and siltation. The vast majority of the construction work involved with this project will be the installation of water transmission lines in the rural areas. As much as possible, the smaller diameter lines will, in all probability, be installed using the "plowing" method, thereby eliminating much of the soil and cover disruption involved with normal backhoe excavation and backfill. The water line will be pressure tested in sections rather than upon system completion and this will allow the section to be seeded soon after its completion. This will help to eliminate much of the potential soil erosion.

The DRWA, through its project engineer, will apply for and most likely receive a nationwide permit from the U.S. Army Corps of Engineers under the Corps 404 program involving river or creek crossings. The Corps of Engineers will specify methods to be used in design and construction to minimize siltation during the construction. The specified construction methods will probably be as follows for the installation of waterlines in stream beds:

> The waterline will be installed by the directional boring method and disturbing of the stream channel will be strictly limited.

The DRWA , through the engineer, and in conjunction with the contractor will need to apply for the 310, SP 124 and other permits outlined in Chapter 5.

The noise problem during construction will not cause a noticeable problem since the majority of the work will be conducted along or in the road and highway

right-of-ways in the rural areas which are accustomed to this type of noise (heavy trucks and diesel engines).

TOXIC SUBSTANCES

There are not expected to be any toxic, hazardous or radioactive substances utilized or produced by the project facilities or the primary beneficiaries.

MITIGATION MEASURES AND ENVIRONMENTAL COMMITMENTS

Top soils will be stockpiled where necessary, and will be preserved and maintained in areas disturbed due to construction.

The Charles M. Russell Wildlife Refuge, as well as all other public and privately owned wetlands, will be avoided whenever possible.

Any wetlands impacted by the project will either be bored under or have the trench completed with provisions to preserve the integrity of the wetlands.

All trees and woodland areas will be avoided unless other routes are not practicable. The number of trees removed will be documented and reported to the Bureau of Reclamation in Billings. The mitigation for the lost trees will be entered into the mitigation ledger for the overall project woodland losses.

Critical grass areas will be shaped and seeded as soon as possible after construction.

All erosion and sediment will be controlled to minimize the environmental effects.

Wherever possible, disturbed terrain will be shaped and contoured to original conditions in effect prior to construction.

All significant cultural resource sites will be avoided during construction and the discovery of artifacts during work progress will require immediate work stoppage and subsequent investigation by the State Historical Preservation Office.

PUBLIC INVOLVEMENT

Numerous public hearings with regard to the project have been held at which landowners and prospective water users have been given information and answers to their questions. The county newspapers have also done a very fine job of reporting the results of the public hearings, as well as the results of meetings of the DRWA Board and original steering committee. The environmental scoping meeting was conducted in December 2005 in Circle, MT. The summary of the

public process in found in Chapter 10 and the newspaper article and attendance rosters are found in the Appendix.

DRAINAGE BASINS

The DRWA is bisected by two major drainage basins. The northeast portion is in the Missouri River Basin and the southwest portion is in the Yellowstone River Basin.

These two basins combine in the eastern portion of the service area. This fact indicates that no foreign organisms will be introduced by the project.

CHAPTER 8
PROJECT ALTERNATIVE COST ESTIMATES

8.1 GENERAL

Project cost estimate with operation maintenance and replacement costs were reviewed for the following design alternatives:

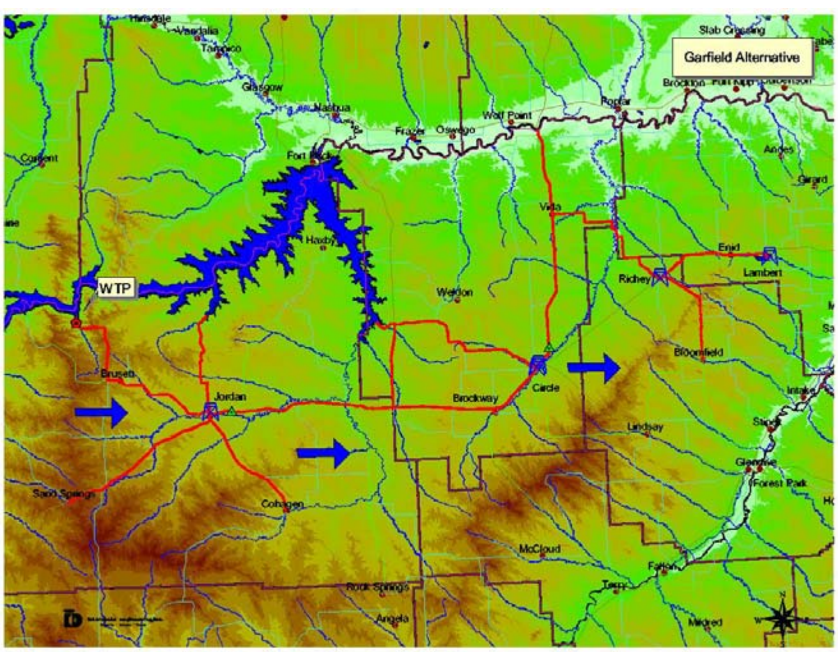
A) Water treatment plant located at Devils Creek in Garfield County
B) Water treatment plant located near Nelson Creek, Rock Creek or Bear Creek in the Big Dry Arm of Fort Peck Lake
C) Missouri River
  1) water treatment plant at Highway 13 crossing
  2) purchase water from the Fort Peck Tribes System
D) Purchase water from the City of Wolf Point
E) Upgrade the Town of Circle's water treatment system

The cost estimates and user numbers were based on the initial user numbers in October 2005. They will differ from the final selected alternate because the final cost will be updated as necessary. The section evaluated all the options based on the same data to determine the most feasible option.

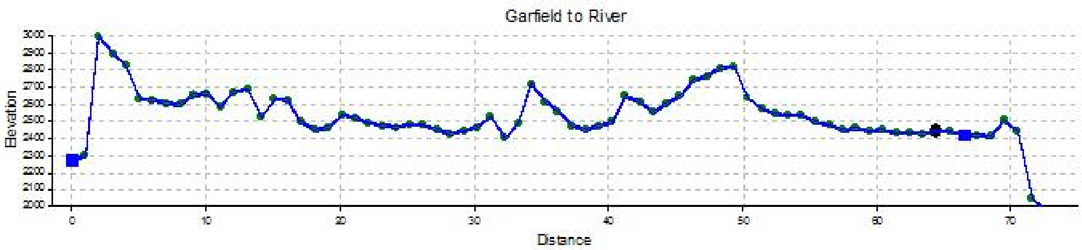
8.2 ALTERNATIVE A
- Water plant location at Devils Creek.

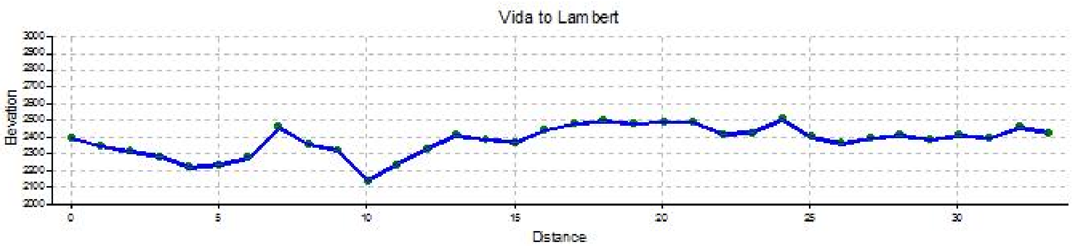
This alternative would locate the water treatment facility and intake in northwestern Garfield County near Devils Creek.

Figure 8.2.1



Garfield Alternative





The West Garfield water treatment plant would be located northwest of Jordan along the Fort Peck Reservoir. The advantage of this location is that the water treatment plant would be located at a higher elevation than a majority of the Dry Redwater core distribution system area. The Fort Peck Reservoir also provides a highly reliable source of raw water. Being located at a higher elevation could potentially allow most of the system to operate under gravity flow conditions, minimizing the need for pressure booster stations. The proposed location of the Garfield WTP is shown in Figure 8.2.1.

Disadvantages of this location are the possibility of not being able to construct the water treatment plant or a raw water pipeline and pumping station within the boundaries of the Charles M. Russell Wildlife Refuge. A second disadvantage would be the miles of large diameter pipeline that would need to be constructed from the water treatment plant to provide sufficient water to communities east of Jordan, namely Circle and Richey. The third disadvantage is the cost to provide electrical service to the water plant site.

The Opinion of Probable Costs is $64,124,000.

Total EDU = 1,705
Cost per EDU = $37,610

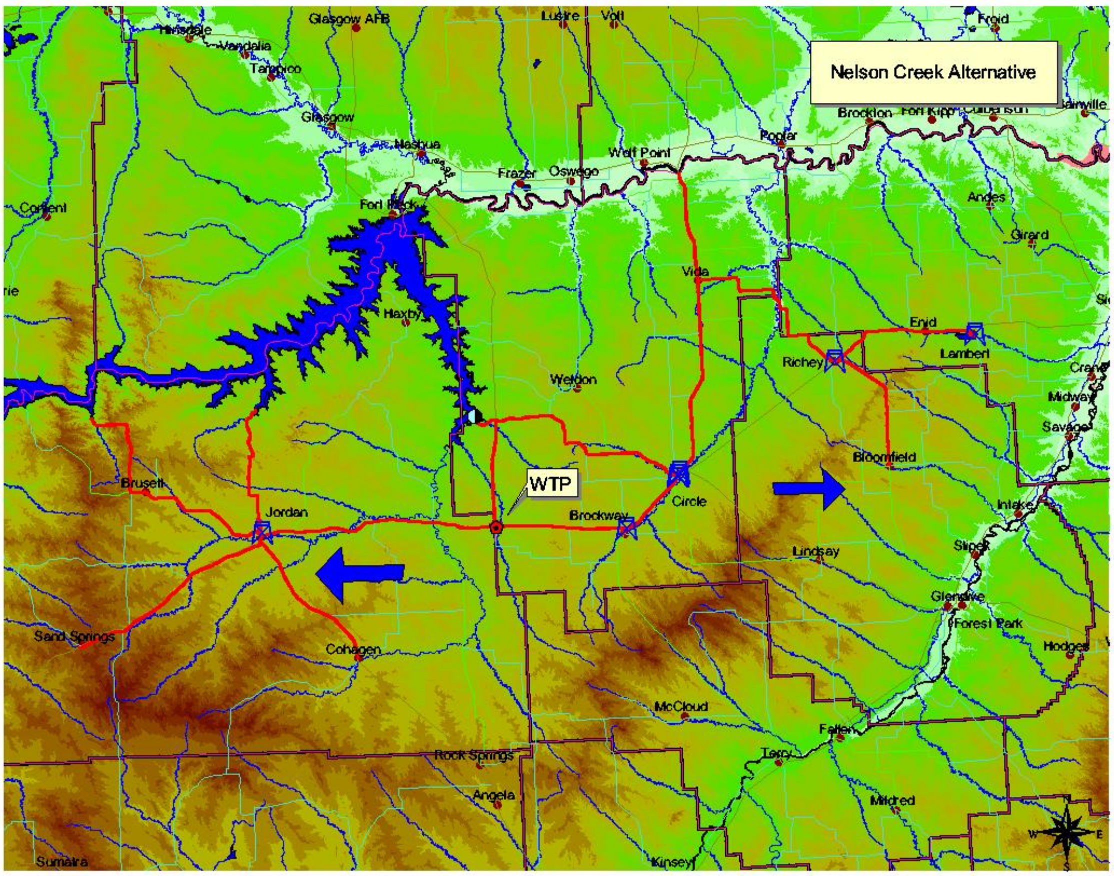
For a total O & M cost per year of $581,000 and an annual replacement reserve cost of $70,000.

8.3 ALTERNATIVE B

- Water treatment plant located near Nelson Creek, Rock Creek or Bear Creek in the Big Dry Arm of Fort Peck Lake.

This alternative would locate the intake and water treatment facility at Nelson Creek in the western edge of McCone County.

Figure 8.3.1



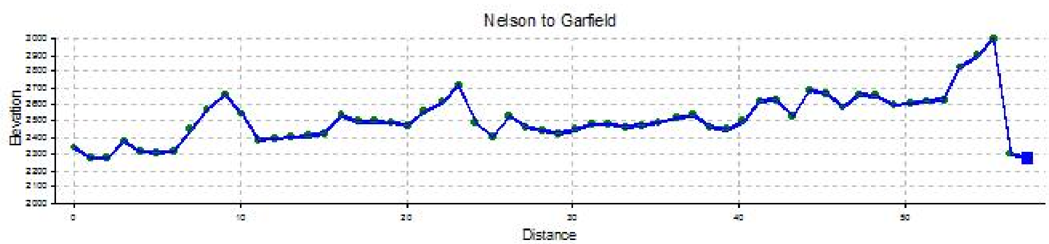
Nelson Creek, Rock Creek or Bear Creek Water Treatment Plant

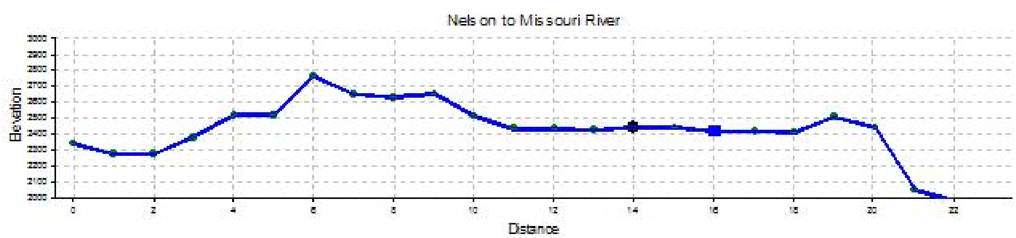
The Nelson, Rock, Bear Creek model assumes a water treatment plant will be built near the proposed coal fired electrical generation plant in the Big Dry Arm of Fort Peck Lake. Raw water would be withdrawn from the Fort Peck Reservoir and pumped to the location of the new Big Dry Arm water treatment plant. A possibility exists that the Dry Redwater system may be able to work in conjunction with the power plant and share in the construction cost of a raw water pipeline that would supply water to both the Dry Redwater Water Treatment Plant and the coal fired electrical generation plant.

Advantages of this system are the central location of the WTP and, the apparent availability of a highly reliable raw water supply. Water from the Fort Peck Reservoir is usually much cleaner than water from the Missouri River, and therefore easier to treat because of the lower initial turbidity levels. If the electrical generation facility were constructed, Dry Redwater would be able to share in the cost of the generation facility's raw water pipeline and obtain raw water from a mutual use pipeline.

Disadvantages of this alternative are the possibility that the generation company may be sold in the future and if Dry Redwater were to be a co-user of the raw water transmission main, new contracts or mutual use agreements would have to be negotiated. There is also the possibility of the generation facility ceasing operation and Dry Redwater having to take over the operation and maintenance of a large diameter water main and associated facilities.

Nelson Creek Alternative





The Opinion of Probable Costs is $61,834,600.

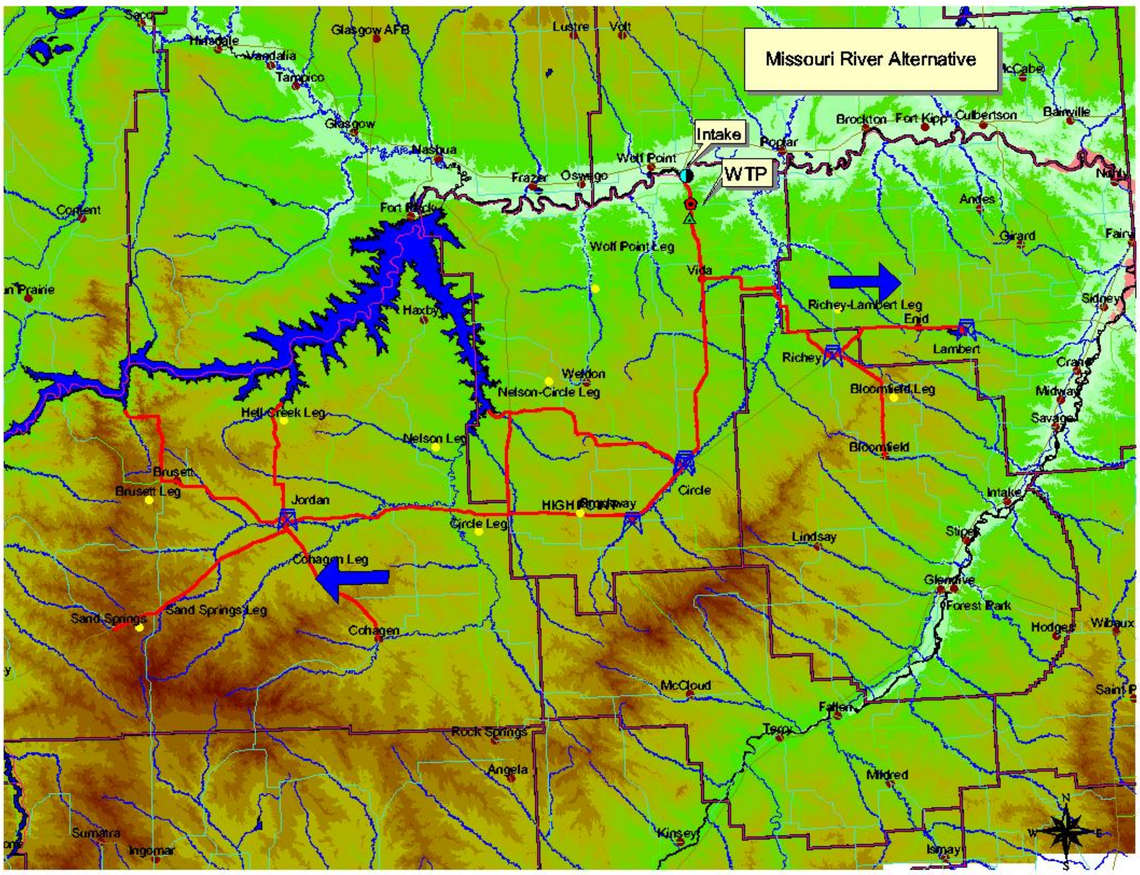
Total EDU = 1,705
Cost per EDU = $36,270

For an annual O & M cost of $581,000 and an annual replacement reserve cost of $70,000.

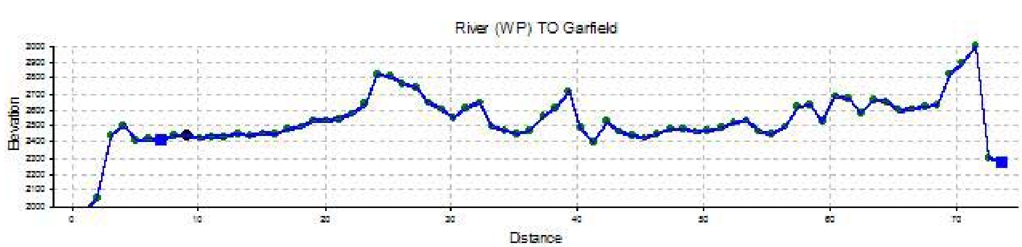
8.4 ALTERNATIVE C
- Missouri River water treatment plant or connection to Fort Peck System.

This alternative would locate either a water treatment facility at the Missouri River near the intersection of MT Hwy 13 or install a pump station and purchase water from the Fort Peck Tribes.

Figure 8.4.1



Missouri River Alternative



Missouri River Water Treatment Plant

The Missouri River Water Treatment Plant model assumes that all of the finished water is produced by the Missouri River Water Treatment Plant or provided by the Fort Peck Tribes. A raw water pump station, located on the Missouri River would pump raw water to the water treatment plant. Pump Stations and reservoirs will be located throughout the distribution system as necessary to maintain and regulate pressure. The core pipeline system, the location of the intake and the Missouri River Water Treatment Plant are shown in Figure 8.6.1.

The advantage of purchasing water is that the existing Fort Peck Tribes water plant can be utilized as the water source for the entire Dry Redwater system and no capital cost to construct the facility would be borne by DRWA.

The disadvantages are that the DRWA would not have control over the cost of water in the future, may not be able to obtain the water they may need at a reasonable price and still add the costs they will need to operate the booster stations and maintain the pipelines. An additional disadvantage in that Fort Peck Tribes would have to apply to Congress for re-authorization to amend their present authorization language.

The Opinion of Probable Costs is $62,690,500 for water treatment plant option and $59,476,600 for Fort Peck Tribes option.

	WTP	Fort Peck Tribes
Total EDU =	1,705	1,705
Cost per EDU =	$36,770	$34,890

For an annual O & M cost of the water treatment plant option are $581,000 and a replacement cost of $70,000 per year; for an annual O & M cost of the water purchase option at $822,000 and a replacement cost of $50,000 per year.

8.5 ALTERNATIVE D
- Purchase water from the City of Wolf Point.

This alternative was dropped due to capacity problems at Wolf Point and the potential for the City of Wolf Point to connect to the Fort Peck Tribal system.

8.6 ALTERNATIVE E
- Expand the Town of Circle's water treatment facility.

The Circle Water Treatment model assumes that all of the finished water is produced by the Circle Water Treatment Plant. The plant would be converted from a groundwater treatment plant to a surface water treatment plant. A raw water pump station, located on the Missouri River would pump raw water to the Circle Treatment Plant. Pump Stations and reservoirs will be located throughout the distribution system as necessary to maintain

and regulate pressure. The raw water pipeline will parallel the finished water pipeline from the Missouri River near Wolf Point to Circle. The core pipeline system, the location of the intake and the Missouri River Water Treatment Plant are shown in Figure 8.6.1.

The advantage of this system is that the existing Circle Water Treatment Plant building, clear well and disinfection facilities, can be utilized as the water treatment plant for the entire Dry Redwater system.

The disadvantages are that the existing filtration system in the Circle Water Treatment Plant will need to be modified to treat surface water versus groundwater and the need to construct parallel piping from the Missouri to Circle.

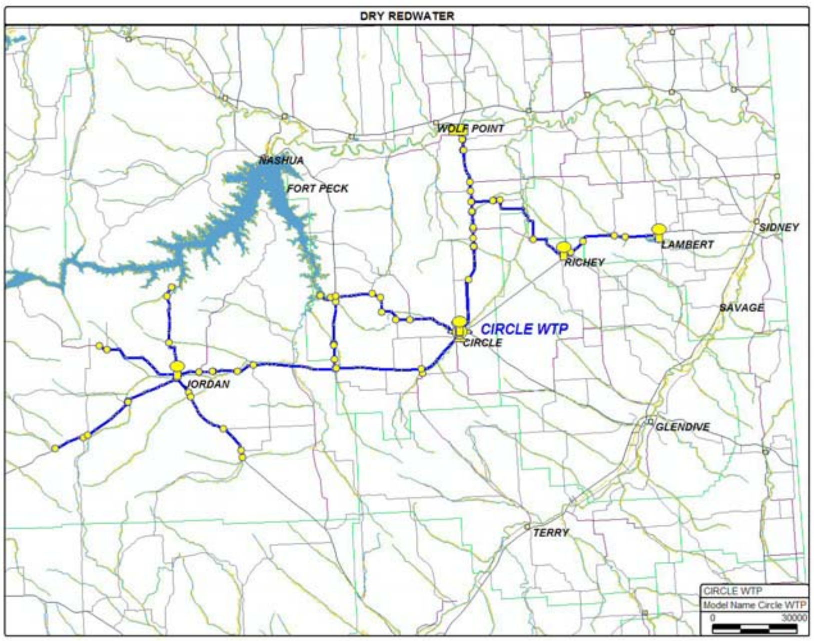


Figure 8.6.1 – Circle WTP Model

There was no further study done on this alternate due to the large cost of bringing raw water to Circle.

CHAPTER 9
PLAN SELECTION

9.1 GENERAL

In previous Chapters various factors were analyzed / considered for each alternative. These factors included capital costs, operation and maintenance costs, user density and location, operational control, water rights and environmental concerns.

The factor that impacts the user the most is the final costs per month, which is directly influenced by all of the factors listed. The project area has a median income level which necessitates that a project of this nature must be as economical as can be achieved.

A listing of 2000 median incomes is shown in Table 9.1.1. Poverty Rate Median Household Income Level is $25,492 or less.

Table 9.1.1
Average Median Household Income
by County

Dawson County	$31,393
Garfield County	25,917
McCone County	29,718
Prairie County	25,451
Richland County	32,110
Average	28,920

2000 Median Incomes

9.2 DESIGN ALTERNATIVES

The design alternates considered were:

A) Water plant located at Devils Creek in Garfield County
B) Water plant located near Nelson Creek, Rock Creek or Bear Creek in the Big Dry Arm of Fort Peck Lake
C) Missouri River
  1) water treatment plant at Highway 13 crossing
  2) purchase water from the Fort Peck Tribes MR&I project
D) Purchase water from the City of Wolf Point
E) Upgrade the Town of Circle's water treatment system

Project cost estimate with operation maintenance and replacement costs are included for the following: A (water treatment plant located at Devils Creek in Garfield County), B (water treatment plant located near Nelson Creek, Rock Creek or Bear Creek in the Big Dry Arm of Fort Peck Lake), C1 (Missouri River – water treatment plant at Highway 13

crossing) and C2 (Missouri River – purchase water from the Fort Peck Tribes System). The other alternatives were dropped for the reasons outlined in Chapter 8.

9.3 EVALUATION OF ALTERNATIVES:

Table 9.3.1 summarizes the economic evaluation for each alternative. Table 9.3.2 analyzes each alternative for several factors.

Economic Evaluation: Each alternative is rated by their present worth of project cost plus operation, maintenance and replacement costs.

Water Quality: Each alternative is rated by their water quality as presented in Chapter 4 of this report.

Risk Potential of Source Contamination: Each alternative is rated by the risk of contamination of the source supply by such things as pesticides, nitrates, etc. (lowest to highest risk).

Availability of Supply: Each alternative is rated by the availability of supply (highest potential to lowest) with regard to such items as current appropriation and the ability for expansion.

Site Topography: Each alternative is rated by the potential of the site topography to enhance the system's operations.

TABLE 9.3.1
ECONOMIC EVALUATION

	A	B	C1	C2
Total Project Cost	$64,124,000	$61,834,600	$62,690,500	$59,476,600
*Present Worth Annual OM & R Cost (P/A, 5%, 40)	11,170,000	11,170,000	11,170,000	16,730,000**
Total Present Worth * 40 Years	$75,294,000	$73,004,000	$73,860,500	$76,206,600

** This value includes the purchase of water from the Tribes.

Water Quality
All alternates utilize a surface water source. Alternates A and B will have lower turbidity spikes since they are in the Fort Peck Reservoir and alternates C1 and C2 are in the Missouri River and are susceptible to higher turbidity levels based on rainfall and snow melt.

Risk Potential of Source Contamination
Alternates A and B are considered to contain less risk because they are surface water in a large body of water and there are less discharge sources to be protected. Surface water is judged more susceptible to contamination due to the accessibility; speed and lack of

natural filtration barriers, Alternate C1, C2 are in the Missouri River, which would have a potential for a sudden water quality change due to a small or unauthorized discharge upstream.

Availability of Supply

The alternates using Missouri River water and Fort Peck Lake are considered to have the same availability of water but the chance of low flow in the river is possible due to the operation of the dam. The overall volume of water needed at full build out, which is currently projected at 734 acre feet is less than 0.01% of the annual water flow in the Missouri River.

Site Topography

Alternate A would be pumping mostly from lower elevation to higher elevations and is not centrally located.

Alternate B would be pumping from a central location and would have some higher elevation pumping.

Alternates C1 and C2 would be pumping from lower elevations to higher elevations and would be located on the outside edge of the service area.

Each factor was scored from best = 1 to worst = 5 and the total for each alternative was divided by the number of factors. If two alternates were the same for a factor, they were given an equal point value.

TABLE 9.3.2
ANALYSIS OF ALTERNATES

	A	B	C1	C2
Economic (Total Present Worth)	3	1	2	4
Water Quality	1	1	2	2
Risk Potential of Source Contamination	1	1	2	2
Availability of Supply	1	1	2	2
Site Topography	3	1	2	2
Number of Rural Users Supplied	1	1	1	1
Combined Evaluation	10	6	11	13
Total divided by 4	2.5	1.0	2.75	3.25

It is expected that during the design process, that additional rural sign-ups will occur. This would likely add to the total project cost, but is difficult to estimate. The nature of a regional water system design allows 10% to 15% increase in users in the core area without significant cost increase.

9.4 ALTERNATE SELECTION:

The alternate that appears to have the highest rating is Alternate B, which locates the water treatment facility in the Big Dry Arm of the Fort Peck Lake. The possibility of a major user (the coal development) was not factored in the costs but should this

development take place it will be a significant positive impact on the project, both from a large user base and a potential source of construction funding.

Following the selection of the preferred alternative, a revised estimate of probable cost was done to update the final users as of 5/10/06, the price of pipe and construction and that revised cost will be utilized in the rate determination and the funding package analysis in the other chapters. The revised opinion of probable cost for this alternate is $82,148,000.

CHAPTER 10
PUBLIC INVOLVEMENT

10.1 GENERAL

The development of a regional water system is a process that requires commitments from the potential users, county, state, federal agencies and technical providers. The concept of a project costing millions of dollars and covering thousands of square miles is not readily accepted by the public, so it is very important to explain the concept by giving examples and successful case studies. The use of public meetings as a means of providing this information to the potential users in the service area is very important. These meetings will provide an exchange of ideas that will help them "buy in" to the concept of a regional water system and lead to the success of the project. The DRWA Board and the original informal and formal steering committees have done an excellent job of setting up meetings to inform, encourage and educate the public. This chapter outlines the effort that has been given to conduct public meetings and the level of interest and financial comments that has resulted.

10.2 PUBLIC PROCESS TIME LINE

The first interest gathering meeting for a potential rural water project was held October 1, 2002 with 19 individuals present (the rosters for this meeting and all meetings referenced in this chapter can be found in the appendix of this study). On December 12, 2005 the volunteer steering committee legally formed the Dry-Redwater Regional Water Authority and elected its Board of Directors. The full agreement with signatures of the forming entities and the filing information from service area counties is found in this appendix.

The table below shows the number of meetings, location and the number of attendees at each meeting. There have been over 20 public meetings held since 2002 with over 20 additional steering committee and board meetings to discuss this project.

Public Involvement Meetings

Date	**Location**	**Purpose**	**Attendees**
10/1/02	Circle	Initial Meeting	19
10/10/03	Circle	Steering Committee	8
10/28/03	Circle	Public Meeting	14
4/2/03	Circle	Public Meeting	16
11/14/03	Circle	Public Meeting	7
12/4/03	Jordan	Public Meeting	40
12/11/03	Circle	Presentation by Ralph Packaluk	61
12/15/03	Vida	Public Meeting	27
1/26/04	Circle	Committee Meeting	6
2/7/04	Elmdale	Public Meeting	11
2/9/04	Lambert	Public Meeting	8

Date	Location	Purpose	Attendees
9/24/04	Jordan	Public Meeting	9
12/12/05	Circle	Environmental Scoping	20
2/6/06	Lambert	Project Presentation	38
2/14/06	Circle	Project Presentation	26
2/21/06	Vida	Project Presentation	15
2/27/06	Richey	Project Presentation	18
2/28/06	Jordan	Project Presentation	34
5/2/06	Fairview	Project Presentation	29

10.3 SUMMARY OF ITEMS DISCUSSED AND FREQUENTLY ASKED QUESTIONS

The process to educate and inform the potential users can be divided into a category of "how will this benefit me directly" and a category of "frequently asked questions" about the process. The sections below summarize how both categories were addressed in the public meeting process.

"HOW WILL THIS BENEFIT ME DIRECTLY"

- **Improved quality of life associated with high quality safe drinking water:** There are health benefits of drinking good quality water. More and more harmful chemicals (many carcinogens) are being found in our ground water all the time. Water from the DRWA system will meet or exceed the Federal water quality standards as all other public water supply systems must meet.
- **Reduction of costs associated with water:** There will be no need to drill or maintain a well. Discontinuing water softening, home water treatment, and water hauling, and no electrical pumping costs will be realized by connecting to the rural water system. The cost of drilling a well and replacing pumps, motors and tanks can be over $97 as estimated by NRCS. The cost of bottled water is $0.95/gallon while water from the rural water system is estimated at $0.007/gallon.
- **Fire Protection:** Hydrants could be installed at various places for rapid, water refill for rural fire fighting.
- **Livestock Use:** Permanent backup in case of stock well failure. Adequate supply due to steady pressure. Increased weight gains in calves.
- **Spray Use:** Fewer plugged nozzles. Potential reduction in chemical costs as result of increased spray efficiency. The system supplies a current analysis of water quality upon request to assist the user in proper mixing of chemicals. This means better mixing of chemicals.
- **Increased resale value of the user's property:** Resale value may increase up to 10% of the property value of the homestead.
- **Improved potential for economic / community development:** Demand readily available for quality and quantity of water. Benefits of construction employment.

- **Lower Iron and Manganese levels:** prevents staining of clothes and plumbing fixtures. In many cases, utilization of treated water will remove stains from plumbing fixtures.
- **Many in our communities do not have good abundant water.** For example: Circle has problems with a heterotrophic bacteria that even after a brand new well the engineers say it will only be a matter of time (maybe 10 to 15 years) before they will need a new water supply. This bacteria may in the future endanger many wells in the area.

"FREQUENTLY ASKED QUESTIONS"

❖ **How much will connection to Rural Water cost me?**
Unknown until after the survey results are complete and the feasibility study is done. Past projects have found the connection fee to be between $500 and $750. The total monthly fee given an average household for similar water systems have typically fallen between $50 and $60 per month.

❖ **What is the Dry-Redwater Regional Water Authority; a rural water system.**
It is a cooperative effort to bring high quality and quantity drinking water for household, business and livestock use. The area of coverage being studied generally includes Dawson, Garfield, McCone, Prairie and Richland Counties.

❖ **How far will they bring the waterline?**
For the "connection fee," the line could be installed on average 2 to 2½ miles, with the curbstop installed typically within 50 feet of the home or other intended point of connection. Exceeding this distance may be allowable on total pipe footage averaged over several users in a given area, or over the entire project. Just because the connection is more than two miles from the planned line route, it is not impossible to get to them.

❖ **How far from the meter can the line run before losing pressure?**
The pressure at the meter should be at 35 - 50 psi. This should hold true for distances not to exceed 500 feet, unless there is a large change in elevation within that distance.

❖ **How will they get the line to my farm?**
Cooperation of the neighbors will be instrumental; we do as a rule seek private easement. In the event easement cannot be secured to reach you, we typically reroute into the road ditch on county easement, route around the property in question, or attempt to reach you from a different direction.

❖ **What about CRP and Pasturelands?**
The land is seeded back to grasses. In the case of CRP Soil Conservation assesses no penalty, for loss of the acreage as a result of our construction. No damages are paid on either CRP or Pastureland.

- **If I live in town, do I have to pay the minimum?**
  The Cities are served on a Bulk User Contract; assessment of minimum within the cities is as it always has been at the City's discretion. DRWA bills the City direct, and the City in turn bills their customers. City customers will typically see a slight increase in their rates with the new water supply.

- **How much will the actual water cost?**
  This will also be determined in the Feasibility Study. Cost are projected somewhere between $2.00 and $3.00 per thousand. The more connections we sign up, the more people we have to spread O&M cost over, and this will result in lower prices. We will, as best possible, determine the total cost with the feasibility study and project a potential rate structure to finance, operation and maintain the system. DRWA has the benefit of the data from over 20 other large operating rural water system to gage what reasonable costs are to a user on a rural water system.

- **What are the potential costs for livestock?**
  The feasibility study will help with the answer to this question also. Based on 16 gallons/head/day, your monthly cost equates to roughly $2.00/head/month. Most producers have found that putting healthy calves to market heavier and faster, offsets the cost of the water and quite often report it to be profitable. Several factors influence water consumption by livestock as well, those being temperature, feed quality, and lactation, one must consider all in the equation of costs. Here again one must consider the cost of replacing the well in the event it fails and most producers find the cost of replacing the well is much higher when looking at their cost for utilizing the rural water system. Not only is drilling a well expensive, but to install power lines can be very cost prohibitive.

  The narrative below is based on data from the NRCS on private well costs.

  Drill and case well: $35.00/ft average depth 200-250 ft Cost: $7,000-$8,750
  If a well lasts 15 years the monthly cost is $39.00 to 48.00 per month.
  Pump and Motor: $1,000.00 If a pump lasts 5 years the monthly cost is $16.70.
  Control pit/pressure tank: $2,800 with a 15 years life has a monthly cost of $15.60.
  Annual stock well electrical rate is $240.00 per year or $20.00/month before electrical use.
  The cost to run electricity to a new well site is $17,160.00/mile or $3.25/ft. These costs were provided by McCone Electric Coop.
  For a new well that already has electric service the monthly costs before any water is pumped is $91.30 to $100.30.

- **How long before the water rates go up?**
  Unfortunately, inflation has a tendency to reach all of us, and from time to time water rates will have to be adjusted to keep up with inflation. As a rule, water rates do not however rise as often as inflation. The rates will be set by the Board of Directors elected by the member entities and water users.

- **Will the system use a lot of water?**
  No, Based on an estimate of 1,200 houses (3,000 people) a project like this will use between 550 and 750 acre foot of water per year. The Missouri River steamflow on average is 6,895,000 acre-foot per year, so the proposed system at full build out would use less than 0.01% of the average annual flow in the Missouri River.

- **What if I do not sign up now?**
  The system will be designed and built based upon the people who indicate interest and desire to be included. After the system is built it will only be able to provide so much water and you may not be able to hook on as there might not be enough capacity. Also, people who want to hook up after the system is designed will pay a higher cost to hookup to the system. This is due to grant funds only being available to those that indicate interest and desire to be a part in the beginning.

- **Does the DRWA project depend upon the proposed Coal Fired Electrical Plant at Nelson Creek?**
  No, the two projects are independent of one another at this time. However, the feasibility study will probably address whether the two projects can help one another. If the coal mine and plant are built the overall cost of the system to the end user will go down given the potential for economic development grants and cost share from the coal company.

- **Where will the water come from and how reliable will it be?**
  It is proposed that the water will come from the Big Dry Arm of the Fort Peck Lake or the Missouri River. The DRWA can also go through the process to obtain a new appropriation. There is discussion with the USACOE to utilize their water rights. The McCone Conservation District has sufficient water rights to provide water to the system if that proves feasible. The Board has been addressed by Bureau of Reclamation personnel that in the feasibility stage of a rural water project finalizing the water rights is not a top priority.

- **Do I have to join?**
  DRWA desires that this system be a voluntary subscription built and maintained by the user. Much of the rate structure depends upon the number of users participating in the project, the more users, the lower the cost for operation and maintenance per user. This is a cooperative effort (similar to bringing in the telephone and electrical services we now have) the more people that join the system the lower the cost will be.

❖ **How much Chlorine is in the water?**
Water is proposed to leave the water treatment plant at 1.5 to 2.5 parts per million. We are required by the Department of Environmental Quality to carry .5 parts per million to the end of the distribution system. The final means of disinfection may not be gas chlorine and will be determined during final pilot studies.

❖ **What is the next step for DRWA? When might we get water?**

1. Complete the survey of all people in the area and the engineering study.
2. Determine our best conservative estimates of potential monthly water rates for everyone.
3. Conduct public/community meetings this next winter.
4. Ask all people at these meetings to decide if they would be willing to sign up and provide a $100 sign up fee. The fee will be refunded if the system is not built and will be applied to the hookup fee if it is.
5. Approach Congress with the help of our Congressmen who are in support of our efforts. Hopefully we will be authorized by Congress.
6. After Congressional Authorization we then need to ask Congress to appropriate the funds to build the system. There will be several more environmental, cultural and engineering studies, each with more detail, before the project will receive construction funds.
7. Build the system in phases as federal or state dollars allow.

We expect to ask to be Authorized in 2007. Obtain funding from Congress in 2009 and start construction hopefully in 2010. The system will be built in stages with completion of the system hopefully five or six years after construction begins.

❖ **Where does the water plant and intake structure going to be built?**
Our best estimate at this time is between Rock Creek and Bear Creek on the Dry Arm of Fort Peck. The treatment facility would be built along Hwy 24 near there.

❖ **How reliable will the system be?**
The system will include a number of storage tanks and leak sensors to increase reliability. A full time staff or locally contracted agreements with water contractors will help insure reliability. Backup power generators will be installed to help insure water to everyone even if a power outage. Just like the phone system currently.

❖ **Will I lose my water rights?**
No. The water rights to be used by this system are proposed to be those acquired by the DRWA. The regional system water rights will not negatively affect your water rights.

❖ **Who is the legal entity Dry-Redwater Regional Water Authority?**
The name comes from the attempt to provide good drinking water to all of the Dry and Redwater River drainages.

The following public agencies are in the process of legally forming a regional water authority under STATE OF MONTANA law; MCA Title 75, Chapter 6, Part 3.

The person listed beside the agency is the agency's appointed representative (Board Members of DRWA):

Town of Circle: Henry Helgeson
Town of Richey: John (Sonny) Whiteman Jr.
Town of Jordan: Baan Wille
McCone County: Pat Eggebrecht
Garfield County: Mike McKeever
Richland County Conservation District: Roger Meyer
Dawson County Conseration District: Marco Unruh
McCone Conservation District: Tod Kasten
Garfield County Conservation District: Dean Rogge

10.4 RESULTS OF THE PUBLIC MEETINGS

There have been very tangible results from the efforts the DRWA Board have exerted. The three charts below show the increase in user interest and commitment.

September 2005

	Richland	McCone	Prairie	Garfield	Dawson	TOTAL
Houses	79	291	2	67	25	464
Pasture Taps	74	183	3	46	18	324
Total Rural:	153	474	5	113	43	788
Jordan Users				250		250
Circle Users		360				360
Richey Users					110	110
Lambert Users	80					80
Total City Users:	80	360	0	250	110	800
Cabin Users		30		50		80
TOTAL:	**233**	**864**	**5**	**413**	**153**	**1668**

October 2005

	Richland	McCone	Prairie	Garfield	Dawson	TOTAL
Houses	79	291	2	67	25	464
Pasture Taps	74	183	3	46	18	324
Total Rural:	153	474	5	113	43	788
Jordan Users				250		250
Circle Users		360				360
Richey Users					147	147
Lambert Users	80					80
Total City Users:	80	360	0	250	147	837
Cabin Users		30		50		80
TOTAL:	**233**	**864**	**5**	**413**	**190**	**1705**

May 2006

	Richland	McCone	Prairie	Garfield	Dawson	TOTAL
Houses	97	326	2	82	35	542
Pasture Taps	87	191	12	52	18	360
Total Rural:	184	517	14	134	53	902
Jordan Users				250		250
Circle Users		360				360
Richey Users					147	147
Lambert Users	80					80
Total City Users:	80	360	0	250	147	837
Cabin Users		60		50		110
TOTAL:	**264**	**937**	**14**	**434**	**200**	**1849**

The tables show that as more information was made available the more people signed up. There are several areas (North Richland County, Fairview area and the west Glendive area) that shared a strong interest, but due to time and budget constraints of this feasibility report, could not be completed, modeled and included in the original study document. These areas will be developed further and the results included as an addendum to this study. A cursory review of the location of the interested parties and the number of them indicate that they can be served within the same user fees as estimated in the feasibility study.

10.5 COMMITMENT TO THE NEXT STEP OF THE PROCESS

The Board of Directors have requested a good intention fee from all the public water suppliers in the study area (Jordan, Circle, Richey and Lambert) and a $100 good intention fee from interested rural users. As of June 6, 2006 the DRWA has received good intention fees of $14,250 which includes 100% support from the existing public water systems, the Rock Creek Cabin Association, Great Northern Power Development L.P, and nearly 100 rural users representing over 50% of the rural users. It should be noted that if a rural user has multiple water service locations, such as the farmstead and of a pasture location, they were asked to pay only one good intention fee.

CHAPTER 11
PROJECT FINANCIAL PLAN

11.1 GENERAL

The project financial plan is based upon Dry Arm Water Treatment Plant (Nelson Creek, Rock Creek or Bear Creek) Site, Alternate B.

A rural water system of the projected size of the Dry Redwater Regional Water System would not be affordable to it's customers without grant assistance.

To illustrate the high cost of water per user without grant assistance:

*Loan Required - $82,148,000
4.5% interest rate over 40-year period
Additional operation, maintenance and replacement cost of $654,500/yr.
Reserve fund equal to 10% of Loan Payment
Cost Per Year:

Loan Payment	=	$4,271,950
Operation & Maintenance	=	579,500
Replacement	=	75,000
Loan Reserve	=	427,050
Total Cost Per Year	=	$5,353,500

* This figure is different from Table 9.3.1 due to update of material costs from the original alternate review and the additional users signed up between September 2005 and April 2006.

For the above conditions, the approximate average water bill per month based on 1,849 EDUs would be:

$212	Monthly Minimum
30	Monthly O, M/R
$242	Month / EDU

The high cost would be unacceptable and unaffordable to the rural users and bulk users in these counties.

11.2 PROPOSED FUNDING

The funding being considered for the DRWA is a 75% grant from the Municipal, Rural and Industrial Water Supply Program (MR & I Program) or a direct Federal Appropriation. The remaining 25% would be pursued in the form of a low interest loan from RUS (Rural Utility Service) for 12-1/2% and a 12-1/2% grant from the State of Montana Treasure State Endowment Program – Regional Water System Fund.

11.3 USER RATE

The proposed rate schedule is based on a minimum monthly payment to cover debt repayment and reserve fund, and the sale of water covering operation, maintenance and replacement costs. The maintenance of the rural lines will be paid by the rural users and the maintenance of the existing water distribution systems in the towns and water districts will be paid for by the town or district user under a separate billing by each individual town or water district.

1. Operation, Maintenance and Replacement – Adequate revenue must be generated for the daily operation of the system. Cost is directly related to amount of water treated and pumped. Traditionally billed per 1000/gallons.
2. Debt Repayment – Repayment of loans used for project construction.
3. Reserve Fund – RUS usually requires that a reserve fund be set up equal to approximately 10% of the debt service funded by user fees.

The following assumptions were made to determine user rate schedules:

1. Grant amount – 75% Federal, 12½% from TSEP Regional Water Fund.
2. Interest rate of 4.5%.
3. Amortization period – 40 years.
4. Average water usage per month.
5. EDU total of 1,849 equivalent dwelling units (837 community, 1,012 rural).

City – Rural users were at an estimated 8,000 gallons/month rate of consumption.

Towns and Water Districts –Estimated yearly requirements = 112 million gallons.

Operation and maintenance costs would be shared on a per 1000 / gallon basis on the amount of water sold per year.

	75%
Grant from Federal Government	61,611,000
Grant from TSEP	10,268,500
Loan Required	10,268,500
Annual Debt Service (40 yrs, 4.5%)	534,000
Annual Loan Reserve	53,400
Annual Operation & Maintenance WTP / Booster Station	484,500
Annual Operation & Maintenance / Pipelines	170,000

Monthly Minimum

The monthly minimum is based upon the annual debt service, loan reserve, replacement and maintenance reserve.

Monthly Minimum	75% Grant
Annual Debt Service	$534,000
Annual Loan Reserve	53,400
Total	$587,400
EDU = 1,849 Cost per EDU/month	$26.50/month

Average Water Usage Rates

Water Treatment / Booster Stations (all users)

$484,500 / 239,000,000 = $2.05 / 1000 gallons

Pipeline Maintenance (rural users)

$170,000 / 117,000,000 = $1.45 / 1000 gallons

Proposed Rate Structure		
	Bulk	Rural
Base	$26.50	$26.50
Water Treatment/Pump	$2.05 / 1000	$2.05 / 1000
Pipeline Maintenance	**	$1.45 / 1000

** Set by each Town or District.

The community / rural user minimum cost per month would be:

		75% Grant		
Community	EDU	Cost per EDU	Monthly Min.	Current Monthly Expense
Circle	360	$26.50	$9,540.00	$11,228.00
Jordan	250	$26.50	$6,625.00	$3,830.00
Lambert	80	$26.50	$2,120.00	$3,105.00
Richey	147	$26.50	$3,895.50	$3,688.00
Rural Users	902	$26.50	$23,903.00	$0.00
Total			$46,083.50	$0.00

Several of the communities in the project area have existing debt that will need to be addressed. The table below shows the level of debt for each community. The existing debt will need to be factored in when determining the final project costs. Some debt can be assumed by the project if a component of the community system can be utilized in the project. DNRC has indicated that some funds for debt relief may be available, but these will be very limited in amount and scope of application.

Current Debt Summary 2005	
Town	*Current Debt*
Circle	$870,531.00
Richey	$0.00
Jordan	$220,000.00*
Lambert	$120,000.00
Total	$1,449,531.00

* The Town of Jordan has not finalized their water improvement project financing. The loan amount could be between $200,000 and $350,000.

CHAPTER 12
IMPLEMENTATION

12.1 AUTHORIZATION / ADDITIONAL STUDIES

Upon completion of the feasibility study and formation of a regional water authority, the next step is to work with the Congressional Delegations to get the project authorized. This process will require assistance from a legal consultant and a firm experienced in the legislative process in Washington, D.C. In the authorization process there will be requirements for environmental, cultural and additional engineering studies. These will all include the detail needed to be reviewed by the various Federal organizations.

Once the Federal authorization is obtained, the DRWA is eligible for accessing the funds set up under the Treasure State Endowment Regional Water Fund. These funds can only be used to match a Federal appropriation.

12.2 PHASES

It is anticipated that the project will need to be built in several phases due to funding availability.

The first phase will likely be to construct the water treatment facility located in the Big Dry Arm of Fort Peck Lake some where between Nelson Creek and Bear Creek. There are also possibilities to temporary use any of the three existing water treatment facilities on an interim basis. This is similar to what is happening with the Dry Prairie Rural Water System utilizing the Culbertson, MT plant to supply water to Medicine Lake, Froid and the rural users in between. This option will need to be further studied as each of the three facilities will need modification in order to produce the required water.

12.3 DESIGN

Upon receiving funding notice, design of an area to maximize the funds available could begin. This would include route selection, final hydrology, historical and environmental clearance on selected sites, pipeline sizing and facility design.

As this process would unfold, permits and easements would be obtained.

Once design is complete, the funding agency would require some time to review plans and specifications.

12.4 BIDDING

The project would be for bid in both local and regional publications to maximize the number of bidders.

12.5 CONSTRUCTION

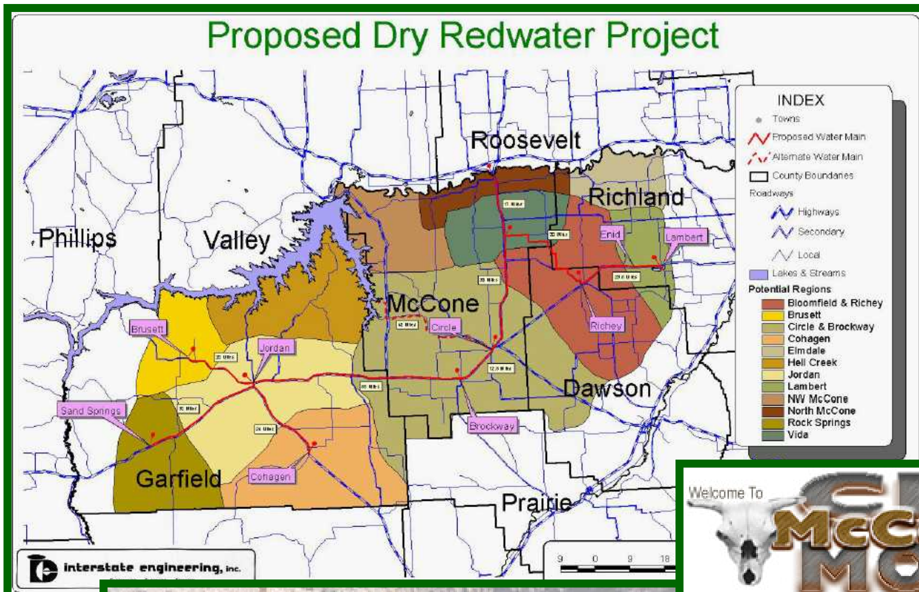
Once construction were to begin, the Engineer would provide onsite observation to record compliance with the plans and specifications, as well as assist the DRWA in payment process.

12.6 POTENTIAL TIME FRAME

The feasibility study was based on construction starting in 2010. The Federal funding package will be the most time consuming due to the Federal process and the availability of Federal funds. It is important that Federal funding be addressed in Federal Fiscal Year 2008-2009.

FINAL FEASIBILITY STUDY -APPENDIX

DRY REDWATER REGIONAL WATER AUTHORITY
JUNE 2006



Submitted By:

interstate engineering, inc.

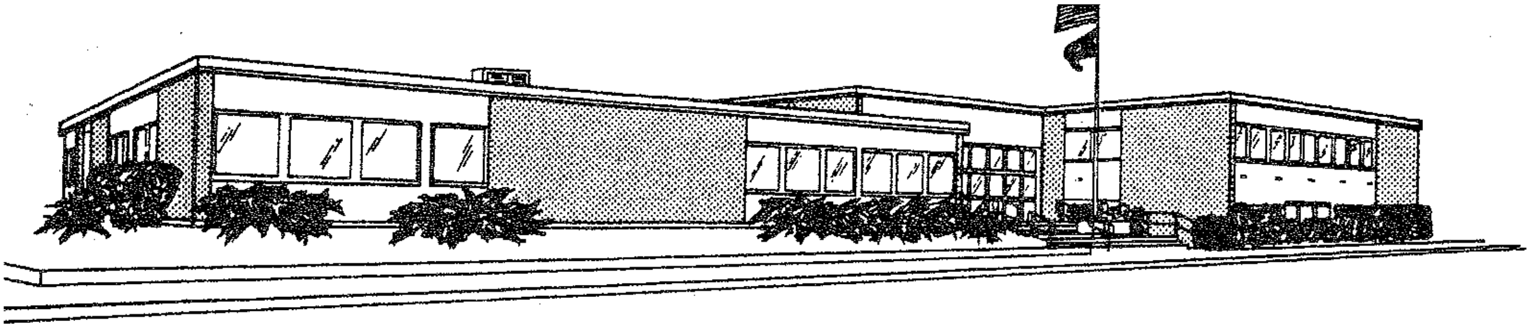
P.O. Box 648
Sidney, MT 59270
Ph: (406)433-5617; Fax: (406)433-5618
www.iengi.com

APPENDIX INDEX

Appendix A

Agreement Forming Dry Red Water Regional Water Authority

By-Laws and Rules



Office of:
County Commissioners
Phone 377-3562
William E LaBree, Chairman
James Skillestad
Adam J Gartner

County of Dawson

207 W. Bell
Glendive, MT 59330

Office of:
Clerk and Recorder
Phone 377-3058
Maurine Lenhardt

Office of:
County Treasurer
Phone 377-3026
Cindi K Byron

JUNE 3, 2005

The Honorable Brad Johnson
Montana Secretary of State
P O Box 202801
Helena, MT 59620-2801

Dear Mr Johnson,

I, Louise Rittal, Dawson County Deputy Clerk and Recorder, certify that the "Agreement Forming Dry-Redwater Regional Water Authority" was filed in Dawson County on June 3, 2205 @ 4:20 PM under Document #425633

Sincerely,

Louise Rittal

Louise Rittal, Deputy
Dawson County Clerk & Recorder's Office

425633 Fee: $5.00
DAWSON COUNTY Recorded 06/03/2005 at 04:20 PM
Maurine Lenhardt, Clk & Rcdr By Louise Rittal
Return To: FILED

McCone County
Clerk & Recorder

P.O. Box 199
Circle, Montana 59215
(406) 485-3505 • Fax (406) 485-2689

June 2nd, 2005

The Honorable Brad Johnson
Montana Secretary of State
P.O. Box 202801
Helena, MT 59620-2801

Dear Mr. Johnson,

I, Maridel L. Kassner, McCone County Clerk and Recorder, certify that the "Agreement Forming Dry-Redwater Regional Water Authority" was filed in McCone County on June 2nd, 2005 at 4:25 o'clock p.m. under document #182385.

Sincerely,

Maridel L Kassner

Maridel L. Kassner
Clerk and Recorder

COUNTY OF RICHLAND
Office Of
CLERK & RECORDER
201 West Main -Sidney, Montana 59270
406-433-1708 FAX 406-433-3731

Clerk and Recorder
Penni D Lewis

Deputy Clerk and Recorder
Yvonne Volkman

June 6, 2005

The Honorable Brad Johnson
Montana Secretary of State
PO Box 202801
Helena, MT 59620-2801

Dear Mr. Johnson:

I, Renae Young, Richland County Recording Clerk certify that the "Agreement Formin g Central Montana Regional Water Authority" was filed in Richland County on June 3, 2005 at 4:28 p.m. under document #530717.

Sincerely,

Richland County
Renae Young
Renae Young, Recording Clerk

GARFIELD
COUNTY
1919

Clerk & Recorder
Garfield County
P.O. Box 7
Jordan, Montana 59337

Phone: (406) 557-2760
Fax: (406) 557-~~2567~~ 2765

June 9th, 2005

The Honorable Brad Johnson
Montana Secretary of State
P.O. Box 202801
Helena, MT 59620-2801

Dear Mr. Johnson,

I, Janet Sherer, Garfield County Clerk & Recorder, certify that the "Agreement Forming Dry-Redwater Regional Water Authority" was filed in Garfield County under document #180448 and as #2056 in Miscellaneous files on June 7th, 2005 at 1:20 p.m.

Sincerely,

Janet Sherer

Janet Sherer
Clerk & Recorder

AGREEMENT FORMING
DRY-REDWATER REGIONAL WATER AUTHORITY (DRWA)

THIS AGREEMENT is made in the State of Montana by and among public agencies organized and existing under the laws of the State of Montana (the State), hereinafter referred to as "Member Entities" which are parties signatory to the Agreement (the "Agreement").

WHEREAS, Title 75, Chapter 6, Part 3, M.C.A., the Regional Water and Wastewater Act (the "Act"), allows public agencies to create regional water authorities, and

WHEREAS, in accordance with the Act, the Member Entities executing this Agreement desire to join together for the purposes of:

1. Pursuing the development, authorization, planning, design and construction of the Dry-Redwater Regional Water Authority system.

2. Securing a source of water on a scale larger than is feasible for individual public agencies acting alone.

3. Issuing net revenue bonds and notes to fund components of the Dry-Redwater Regional Water Authority system.

4. Selling water to public services districts, municipalities, publicly and privately owned water utilities, and others.

5. Providing the administration, operation, maintenance, billing and collection of the Authority.

WHEREAS, the governing board of each Member Entity has determined that it is in its own best interest and in the pubic interest that this Agreement be executed and that it participate as a member of the public entity (the "Authority") created by this Agreement:

NOW THEREFORE, in consideration of the mutual benefits, promises and agreements set forth below, the parties agree as follows:

1. DEFINITIONS

   a. "Authority" shall mean the Dry-Redwater Regional Water Authority (DRWA) created by this Agreement, or any successor hereto.

   b. "Board of Directors" or "Board" shall mean the governing body of the Authority.

c. "Bonds and Notes" shall mean Bonds and Notes issued by the Authority pursuant to the Act for the purpose of financing the construction and/or operation of the Dry-Redwater Regional Water Authority.

d. "Bylaws" shall mean the bylaws adopted by the Board prescribing the rules for the operation of the Authority.

e. "Service area" shall mean the Dry-Redwater Regional Water Authority System Service Area

f. The "Regional Water and Wastewater Act" shall mean Title 75, Chapter 2, Part 3, M.C.A., as amended.

g. "M.C.A." shall mean the Montana Code Annotated.

h. "Member Entity" shall mean any public agency which has executed this Agreement and become a member of the Authority. Public agency means any municipality, county water and sewer district, conservation district or other political subdivision of the State.

i. "Water Purchase Agreement" shall mean the agreement between the Authority and any of the Member Entities, which shall contain the amount of water purchased, or to be purchased, and the commencement date that the member entities will be required to pay the water rates.

2. DURATION

The Authority shall commence when this Agreement is signed by authorized representatives of all the Initial Member Entities, and filed with the Secretary of State and County Clerks and Recorders as provided by Montana law. The Authority shall continue in existence until all of its objectives have been accomplished unless two thirds (2/3) of the Board of Directors of the Authority decide that its impossible or unfeasible to accomplish the Authority's objectives. If two thirds (2/3) of the Board of Directors of the Authority decide that it is impossible or unfeasible to accomplish the Authority's objectives, then the unused portion of any and all grants or funding acquired by the Authority shall be returned to the original source of funding, and the Authority shall dissolve. However, if the Authority reforms into a different entity or structure, then grants and funding are transferable to the new entity or structure.

3. ORGANIZATION AND NATURE OF AUTHORITY CREATED

a) <u>General Membership</u>. The Authority shall be composed of public agencies entering into this Agreement as provided herein.

b) Initial Member Entities. Upon approval and signing this Agreement, the Member Entities of the Dry-Redwater Regional Water Authority shall be: Town of Circle, Town of Jordan, Town of Richey, Garfield County, McCone County, Garfield County Conservation District, McCone Conservation District, Richland County Conservation District and Dawson County Conservation District.

c) Board of Directors, Officers. The Board of Directors will be formed by representation of the Member Entities based upon the number of hookups with one representation per 500 hookups, or portion thereof. Representation from any one Member Entity cannot exceed three Directors. The Directors shall be appointed by the governing body of each Member Entity. Directors shall serve for four (4) year terms, which terms shall be staggered as drawn by lot so that members will have overlapping terms. The terms of the initial Directors shall be 1, 2, 3, and 4 years. The Board of Directors shall appoint from its Membership a Chairman of the Board, Vice-Chairman and a Secretary-Treasurer.

d) Special Weighing of Votes. To maintain fairness in the decisions and operations of the Authority, the Member Entities vote(s) will be weighted based upon the percentage of volumes of water purchased by each Member Entity of the total volumes of water sold by the Authority. The weighted vote of each Member Entity will be split evenly between each Director appointed by the governing body of each Member Entity if there is more than one Director appointed.

e) Water Authority Coordinator/Manager. The Board of Directors may hire a Water Authority Coordinator and /or Water Authority Manager for the Authority, and any other employees as may be required to carry out the purposes of the Agreement. The Board of Directors shall give general direction and guidance to the Water Authority Coordinator and /or Water Authority Manager. A Water Authority Coordinator and /or Water Authority Manager shall not act without the approval and general direction of the Board of Directors. The Board of Directors shall meet on a regularly scheduled basis to adequately fulfill its obligation to give direction and guidance to the Water Authority Coordinator and /or Water Authority Manager.

4. POWERS DELEGATED TO THE AUTHORITY

The Authority shall have all powers and authority that may be exercised by an authority under the Act. The Board of Directors shall have the powers and authority granted to an authority's Governing Body under the Act.

5. PURPOSE OF AUTHORITY

The purpose of this agreement is to create a regional water authority (the "Authority") in accordance with Title 75, Chapter 6, Part 3, M.C.A. The purpose of the Authority shall be to participate in, coordinate and accomplish the designing, funding, construction and operation of all components of a water system (hereunder "Water Project") to provide water to rural communities, organizations, businesses and individuals within the Dry-Redwater Regional Water Authority service area.

6. FINANCING OF THE AUTHORITY (ESTABLISHING AND MAINTAINING A BUDGET)

a) Bonding. Persons entrusted with handling the Authority's funds may be required by the Board of Directors to furnish, at the Authority's expense, a suitable fidelity bond.

b) Budget. The Board of Directors shall establish a budget for the operations of the Authority. It is anticipated that the authority will be able to obtain grants to fund the costs of the authority and the preliminary work with respect to feasibility studies, and preliminary designs of the Water Project. To the extent such grants are not available or sufficient to cover such costs, the Member Entities shall be responsible for the costs of the Authority. Any costs of the Authority to be collected from Member Entities prior to the completion and operation of the Water System shall be allocated on the basis of equal parts per hook-up, subject to unanimous agreement by the Member Entities. Any cost incurred by the Authority after the Member Entities have signed "Water Use Agreements", as defined in the Act, must be approved by a simple majority of a quorum at a legally noticed meeting.

c) Use of Funds. All grants and appropriations received from federal and state entities shall be held for the purpose of the Authority. No disbursement of such funds shall be made without the consent of a majority of the Board of Directors.

7. PARTIAL OR COMPLETE TERMINATION OF THIS AGREEMENT

This Agreement may be terminated by two thirds (2/3) vote of the Board of Directors, subject to Section 12 of this Agreement. This Agreement may be modified or partially terminated only by unanimous vote of the Board of Directors.

8. ALLOWABLE WAYS TO DISPOSE OF PROPERTY UPON PARTIAL OR COMPLETE TERMINATION OF THE AUTHORITY

If two thirds (2/3) of the Board of Directors decide that it's impossible or unfeasible to accomplish the Authority's objectives, then the Authority shall be dissolved and this Agreement shall be terminated. If two thirds (2/3) of the Board of Directors vote that it's impossible or unfeasible to accomplish the Authority's objectives, then the unused potion of any and all grants or funding acquired by the Authority shall be returned to the original source of funding, and the Authority shall dissolve. However, if the Authority reforms itself into a different entity or structure, then grants and funding may be transferred to the new entity or structure.

9. MANNER OF ACQUIRING, HOLDING AND DISPOSING OF REAL AND PERSONAL PROPERTY

The Authority may acquire, hold and dispose of real and personal property in accordance with the majority vote of the Board of Directors.

10. NEW MEMBERS

This Agreement may be amended to include additional Public Agencies as Member Entities by consent of two thirds (2/3) vote of the signatories to this Agreement. If the terms of the Agreement are to be changed upon inclusion of an additional public agency or agencies, then the original Member Entities and the new public agency or agencies must enter into a new Agreement.

11. COVENANT NOT TO COMPETE

The Authority and any of its members shall not offer or provide water in competition with any other Member Entity to this Agreement.

12. LIABILITY FOR DEBTS

Any entity which signs this Agreement or any successor agreement, shall not be liable for debts of the Authority, as all debts, including bonded indebtedness, shall be paid from the revenues and assets of the Authority only, and not from any other source of funds. To the extent that Member Entities approve and enter into long-term contracts for the purchase of water or wastewater treatment services, the Member Entity must acknowledge that such purchase contracts constitute the primary source of revenues of the Authority. Consequently, no Member Entity shall be permitted to withdraw from this Agreement until all outstanding bonded indebtedness of the Authority is retired or the bondholders and other signatory entities are otherwise protected.

13. AUTHORITY TO ABIDE BY THE LAW

The Authority shall abide by all provisions of United States and Montana Law, including but not limited to Title 76, Chapter 6, Part 3, M.C.A. The provisions of Title 76, Chapter 6, Part 3, M.C.A., are incorporated herein as part of this Agreement.

14. NO ASSIGNMENT OR WAIVER

The rights and responsibilities of Member Entities of the Dry-Redwater Regional Water Authority shall not be assigned or transferred without the prior approval and written consent of the Authority. The failure by any Member Entity to insist upon performance of the terms of this Agreement shall not constitute a waiver of any terms or conditions.

15. ENTIRE AGREEMENT; MODIFICATION TO BE IN WRITING/SIGNED

This Agreement constitutes the entire agreement between the Member Entities. There shall be no modification or amendment of this Agreement unless it is in writing and signed by an authorized representative of each Member Entity to this Agreement.

16. CONTROLLING LAW

All provisions of this Agreement and the interpretation of all provisions in this Agreement shall be governed by Montana law unless otherwise required by public law.

17. JURISDICTION

The Montana District and Supreme Courts shall have jurisdiction over any litigation regarding this Agreement. Venue for any litigation regarding this Agreement shall be in McCone County.

18. ALTERNATIVE DISPUTE RESOLUTION

The Member Entities of the Authority and the parties hereto agree that no court action to interpret or enforce the terms and conditions of this Agreement shall be begun in a court of law without first attempting to mediate a settlement of the dispute. Further, the Member Entities of the Authority and the parties hereto agree that binding or no-binding arbitration shall be available to interpret or resolve any disputes relating to this Agreement, should the parties agree to utilize arbitration.

19. APPROVAL AND AUTHORITY TO SIGN

The governing body of each Member Entity shall adopt a resolution approving the entering into of the Agreement and authorize its execution by its Mayor, City or Town Manager, City Clerk, County Commissioner and Conservation District Chairperson. Each person executing this Agreement has the authority to represent one of the Member Entities. Each person signing this Agreement is empowered to sign for and thereby bind that person's respective organization.

TOWN OF CIRCLE

Signed By: C E McFarland
Mayor
ATTEST:
BY: Carol Markusen
Town Clerk
4-12, 2005
Date

TOWN OF JORDAN

Signed By: Mae Bergdall
Mayor
ATTEST:
BY: [illegible]
Town Clerk
5-5-, 2005
Date

TOWN OF RICHEY

Signed By: John Whiteman Jr.
Mayor
ATTEST:
BY: Teresa Unruh
Town Clerk
May 3, 2005
Date

GARFIELD COUNTY

Signed By: Phil D Hill
Commissioner
May 23, 2005
Date

MCCONE COUNTY

Signed By: Connie Eissinger
Commissioner
April 18, 2005
Date

McCone Conservation District

Signed By: Bruce A. Wright
Bruce Wright, Chairman
~~[illegible]~~ May 4, 2005
Date

Richland County Conservation District

Signed By: Tony Barone
Tony Barone, Chairman
4-14, 2005
Date

Garfield County Conservation District

Signed By: Tim Hafla
Tim Hafla, Chairman
5-11-05, 2005
Date

Dawson County Conservation District

Signed By: Walter Borntrager
Walter Borntrager, Chairman
April 11, 2005
Date

182385

File No. ______________________

Document No. ______________________

AGREEMENT FORMING DRY-REDWATER
REGIONAL WATER AUTHORITY

Town of Circle et al

TO

The Public

STATE OF MONTANA
COUNTY OF McCONE, ss

The within instrument was filed for record on

June 1, 2005 at 4:25 o'clock

P M., and is duly recorded in book Filed of

______________ page ______________

Maridel L. Kassner
County Clerk and Recorder

By ______________________
Deputy

Fee $ 5.00 paid.

STATE OF MONTANA }SS.
County of McCone

I hereby certify that the instrument to which this certificate is annexed is a true, complete and correct copy of the original on file in my office. File #122385

Witness My Hand seal of office

this 2nd day of June, 2005

Maridel L Kassner

MARIDEL L. KASSNER Clerk and Recorder

By________________________Deputy

BY-LAWS & RULES
of the
DRY-REDWATER REGIONAL WATER AUTHORITY

ARTICLE I
Name and Location

SECTION 1

The name of the Authority shall be Dry-Redwater Regional Water Authority (DRWA), which includes the following Initial Member Entities: Town of Jordan, Town of Richey, Town of Circle, Dawson County Conservation District, Richland County Conservation District, McCone Conservation District, Garfield County Conservation District, McCone County and Garfield County.

SECTION 2

The principle place of business of this Authority shall be the McCone Conservation District office in Circle, Montana or such other offices for the transaction of business as the Board of Directors may from time to time determine.

SECTION 3

These By-Laws & Rules are only to augment and clarify the Agreement Forming the Dry-Redwater Regional Water Authority that was signed by all of the Initial Member Entities and recorded in Dawson County, June 3, 2005 under document #425633; McCone County, June 2, 2005, under document #182385: Richland County, June 3, 2005, under document #530717 and Garfield County, June 7, 2005, under document #180448.

ARTICLE II
General Purpose

SECTION 1

The general purpose for which the DRWA is formed is to own and operate a water system that will provide a water supply, transmission system and treatment system to the Member Entities The DRWA is responsible for the administration of the Authority, operation and maintenance of the Regional Water System; billing and collection and all other duties and or items required for and in the operation of a regional water authority in the State of Montana

ARTICLE III
Function

SECTION 1

The function of the DRWA is to join a number of agencies together to secure a source of water on a scale larger than is feasible for individual systems acting alone and to sell and deliver the water in the most economical way possible to public service districts, municipalities, publicly and privately owned water utilities and others.

SECTION 2

The function of the DRWA is to join agencies together to carry out the joint functions of a regional water authority in the State of Montana.

ARTICLE IV
Powers of the Authority

SECTION 1

The DRWA may enter into contracts for the purchase, sale, treatment, distribution or transmission of water. The term of any contracts or agreements may not exceed 40 years.

SECTION 2

The DRWA is subject to the statutory requirements for competitive bidding and procurement contracts as would be applicable to any Member Entity and regional water authorities authorized to operate in the State of Montana

SECTION 3

The DRWA may borrow money for the planning, development, construction, acquisition, maintenance or operation of the system.

SECTION 4

The DRWA may acquire, own and hold real and personal property that may be necessary to carry out the purpose of the DRWA. In order to dispose of real or personal property, a resolution, giving such authority, must be approved by majority vote of the membership, except in ordinary course of business.

ARTICLE V
Membership

SECTION 1

Each Member Entity must be a public agency and take appropriate action by ordinance, resolution or otherwise pursuant to law of the governing bodies of the participating public agencies in order to be a Member of the DRWA. The Member Entities will constitute the membership of the DRWA.

SECTION 2

Each Member Entity will be required to negotiate in good faith a potential "Water Purchase Agreement" with the DRWA for the delivery and payment of water.

SECTION 3

Member Entities that do not in a normal course of business enter into a "Water Purchase Agreement" with the DRWA are subject to being removed from the DRWA by a majority vote of the remaining Member Entities, subject to Section 4.

SECTION 4

Member Entities that enter into a "Water Purchase Agreement" with the DRWA may not withdraw from the agreement until the outstanding bonded indebtedness of the Authority is retired or bondholders are otherwise protected

ARTICLE VI
Board of Directors

SECTION 1

The Member Entities governing board will select their own representation on the Board of Directors of the Authority. The Board of Directors will be formed by representation of the Member Entities based upon the number of hookups with one representation per 500 hookups, or portion thereof. Representation from any one Member Entity cannot exceed three Directors. The Directors shall be appointed by the governing body of each Member Entity.

SECTION 2

Should a Director resign or other wise be removed or unable to perform their duty as a Director it is the responsibility of the Member Entity to appoint another Director to fill the remaining term of the previous Director.

SECTION 3

To maintain fairness in the decisions and operations of the Authority, the Member Entities vote(s) will be weighted based upon the percentage of volumes of water purchased by each Member Entity of the total volumes of water sold by the Authority. The weighted vote of each Member Entity will be split evenly between each Director appointed by the governing body of each Member Entity if there is more than one Director appointed.

SECTION 4

Each Director's full term will be 4 years, with the exception that the initial Director's terms must be staggered as drawn by lot so that the initial Directors will have overlapping terms The terms of the initial Directors shall be 1, 2, 3, and 4 years.

SECTION 5

Absence from more than two (2) consecutive meetings will be reported to the governing body of the participating system. Three (3) consecutive absences constitutes as a voluntary resignation of the Director.

ARTICLE VII
Meetings

SECTION 1

The annual meeting of the Membership of the Authority shall be held within one hundred and twenty (120) days of the DRWA's fiscal year end of each year, with date, time and place in Montana as shall be designated by the Board of Directors in the Notice of Meeting. Notice thereof shall be given to each Member Entity not less than fifteen (15) days in advance thereof

ORDER OF BUSINESS

a Call to Order
b. Report by Secretary to Members present and determination of a quorum
c Reading the Notice of Meeting
d. Reading and approval of minutes of last meeting
e Presentation of financial report of the Authority
f Report of directors and committees
g Election of directors, executive committee and officers
h. Unfinished and new business

SECTION 2

The Board of Directors of the Authority shall meet as often as needs of the Authority require, but not less frequently than on a quarterly basis. Notice of meetings shall be given by first class mail or by electronic mail (e-mail and/or fax) to each Director of record, not less that five (5), nor more than forty (40), days prior to such meeting

SECTION 3

The Authority is subject to the provisions of Title 2, Chapter 3, MCA, regarding open meeting laws and public participation.

SECTION 4

A majority of the Directors shall constitute a quorum at any meeting of the Authority. The Board of Directors shall act by resolution and the ayes and nays shall be entered in the proceedings of the Board of Directors

ARTICLE VIII
Executive Committee

SECTION 1

The day-to-day affairs of the Authority shall be managed by an Executive Committee made up of the Officers of the DRWA to be elected from within the Board of Directors. The Executive Committee cannot consist of two Directors from the same Member Entity. This Committee shall exercise all the powers of the Authority except such as is expressly conferred upon or reserved to the Directors by the By-Laws.

SECTION 2

The Executive Committee will consist of the Chairman, Vice-chairman, Secretary and Treasurer to be elected at the annual meeting of members The positions of Secretary and Treasure may be combined based upon a vote to do so by a majority of the Directors Each shall be elected for a one (1) year term.

SECTION 3

The Executive Committee shall act for and on behalf of the membership during the intervals between the meetings of the membership, subject to policies agreed upon by members

SECTION 4

All members of the Executive Committee shall convene and meet upon call by the Chairman or a majority of the Executive Committee. Such call shall consist of written notice mailed or electronic mail (email and or fax) at least three (3) days prior to the date of the meeting, which will fix the time, date and place of the meeting.

ARTICLE IX

Duties of Directors

SECTION 1

Directors shall select and appoint all agents or employees of the Authority, remove such agents or employees of the Authority, prescribe duties, and powers as may not be inconsistent with these By-Laws, and fix their compensation.

SECTION 2

The Board of Directors may hire a Water Authority Coordinator and /or Water Authority Manager for the DRWA. The Board of Directors shall give general direction and guidance to the Water Authority Coordinator and /or Water Authority Manager. A Water Authority Coordinator and /or Water Authority Manager shall not act without the approval and general direction of the Board of Directors

SECTION 3

Directors may prescribe, adopt, and amend, from time to time, such rules and regulations, as in its discretion, may be deemed essential for the conduct of the business of the Authority, and the guidance and control of its officers and employees, and may prescribe adequate penalties for violation.

SECTION 4

Directors may order, at least once each year, an audit of books and accounts of the Authority by a competent public auditor or accountant The report prepared by such auditor or accountant shall be submitted to the membership of the Authority together with a proposed budget for the ensuing year Copies of such audits and budget shall be submitted to such parties as may be required by other agreements.

SECTION 5

Directors may fix and alter the charges to be paid by each Member Entity for services rendered by the Authority to the members, and may fix and alter the method of billing, time of payment, manner of connection, and penalty for late or non-payment. The Board may establish one or more classes of users All charges shall be uniform and non-discriminating within each class of users.

SECTION 6

The Board of Directors may elect one or more banks to act as depositories of the funds of the Authority, the form of checks, the person or persons by whom the same shall be signed, and appropriate changes any from time to time.

SECTION 7

The Board may require all officers, agents, and employees charged with responsibility for the custody of any of the funds of the Authority, to give adequate bonds, the cost thereof to be paid by the Authority.

SECTION 8

The Board may determine the manner of receiving and paying claims to the Authority, however all claims shall be approved by the Executive Committee

SECTION 9

The Board may decide to reimburse Directors for traveling and any other reasonable expenses No salary or compensation will be paid to a Director for their time. A Director may not be a paid employee of the DRWA.

ARTICLE X
Officers

SECTION 1

The Chairman shall preside over all meetings of the Authority and the Executive Committee, call special meetings of the Executive Committee, perform all acts and duties usually performed by an executive and presiding officer, and sign all documents as may be authorized by the Board of Directors

SECTION 2

In the absence of the Chairman or in the event of inability or refusal to act, the Vice-Chairman shall perform the duties of the Chairman; and when so acting, shall have the powers of and be subject to all the restrictions upon the Chairman, and shall perform such other duties as from time to time may be assigned by the Board of Directors.

SECTION 3

The Secretary shall keep the minutes of the meetings of the members, Board of Directors and the Executive Committee in one or more books provided for that purpose.

SECTION 4

The Treasurer shall have charge and custody of and be responsible for all the funds and securities of the Authority, and cause to be maintained a proper record of the receipts and disbursements of the Authority in accordance with good accounting practices; to cause funds of the Authority to be disbursed, when such disbursement shall have been duly authorized. The officer positions of Secretary and Treasurer may, upon approval of the Board of Directors, be combined and held by the same individual.

ARTICLE XI

Benefit and Duties of Members

SECTION 1

Revenue Bonds issued by the Authority are a lien on the revenue produced from the operations of the Authority They may not be general obligations of the participating systems in the agreement The bonds will be net revenue bonds and sinking funds must be established at or before the issuance of any bonds The Authority must make provisions for the payment of the bonds. The rates, fees, and charges must be sufficient to pay the costs of operations, improvements, and maintenance of the Authority's water supply; provide an adequate depreciation fund; provide an adequate sinking fund to retire any bonds and pay interest on the bonds when due; and create reasonable reserves for the enumerated purposes

SECTION 2

The Authority will install, maintain and operate a main transmission line and water supply system for the transmission lines. At the delivery points, meters will be purchased, installed, owned and maintained by the Authority The Authority will be responsible for the testing at each delivery point for compliance with all applicable regulations

SECTION 3

Unless the Authority enters a written agreement with a Member Entity to the otherwise, each Member Entity will be responsible for the distribution lines within its own jurisdiction. They will be responsible for the testing and all operations within their distribution system

SECTION 4

Each Member Entity may be permitted to purchase from the Authority, pursuant to such agreement as may from time to time be provided and required by the Authority, such water as is needed for domestic, commercial, agricultural, industrial, or other purposes as a member may desire, subject, however, to the provisions of these By-Laws and to such rules and regulations as may be prescribed by the Board of Directors

SECTION 5

In the event the total water supply shall be insufficient to meet all of the needs of the members, or in the event there is a shortage of water, the Authority may prorate the water available among the various meters on such basis as deemed equitable by the Board of Directors.

SECTION 6

The Member Entities will represent the following potential end user customers within the DRWA service area. The Towns and Cities will represent all users within the legal boundaries of their towns and cities. The Conservation Districts will represent all household and livestock end user customers not located within a town or city within their respective County area of operation. The Counties will represent all the commercial, non-household and non-livestock end user customers not located within a town or a city within their respective County.

ARTICLE XII
Amendments

SECTION 1

These By-Laws may be amended by a majority vote of the members at any annual meeting of the Authority, provided that proper written notice of any proposed revisions is mailed to the members at least ten (10) days prior to the annual meeting at which amendment will be voted on

SECTION 2

If there becomes a vacancy on the Executive Committee by reason of death, resignation, or otherwise, except by removal from office, the remaining members of the Executive Committee shall appoint a successor who shall hold office until the next regular meeting of the Authority, at which time the Directors will elect a replacement for the unexpired term, or new term, provided that notice of such election will be given in the regular call of the meeting.

SECTION 3

The Officers and Directors may be removed from office in the following manner:

1) Any member, officer, or Director may present charges against a Director or Officer by filing them in writing with the Secretary of the Authority If presented by a member, the charges must be accompanied by a petition signed by ten percent (10%) of the members of the Authority. Such removal shall be voted on at the next regular or special meeting of the members and shall be effective if approved by a vote of a majority of those voting if a quorum is present. The Director or Officer against whom such charges have been presented shall be informed in writing of such charges at least twenty (20) days prior to the meeting, and shall have the opportunity at such meeting to be heard in person or by counsel and to present witnesses: and the persons presenting such charges shall have the same opportunity.
2) Any Member entity may replace their own representative(s) on the Board of Directors by filing a letter of intention of such action, the letter must include the name of a replacement, 30 days prior to the effective date of the change with the Secretary of the Authority

If the removal or change of a Director takes place, such action shall also vacate any other office held by the removed Director in the Authority. A vacancy in any office thus created, shall be filled by the Board of Directors from among their number so constituted after the vacancy in the Board has been created

Adopted ____December 12, 2005________________

Signed: ____________________________________
Mike McKeever, Chairman

Attest:____________________________________
Roger Meyer, Secretary

RESOLUTION 05-03

May 3, 2005

WHEREAS, Garfield County relies on well water for their domestic household water and livestock water for all the residents of Jordan and Garfield County. Garfield County and the Town of Jordan recognize the need for quality and quantity of good water, and,

WHEREAS, a group of volunteers have worked diligently and with the best interest of the public in mind to find a technically and financially feasible way to provide good quality and quantity of household and livestock water for the area residents, and

WHEREAS, Title 75, Chapter 6, Part 3, MCA. the Regional Water and Wastewater Act (the "Act") allows public agencies the ability to create regional water authorities, and

WHEREAS, in accordance with the Act, a number of local area public agencies desire to join together for the purpose to participate in, coordinate and accomplish the technical and financial feasibility of the project, work to educate the residents of the area as to its findings and to pursue the development, authorization, planning, design and construction of the Dry-Redwater Regional Water Authority service area, and,

WHEREAS, the Garfield County Commissioners have determined that it is in its own best interest and in the public interest that the Agreement forming the DRY-REDWATER REGIONAL WATER AUTHORITY be executed and that it participate as a member of the public entity (the Authority) created by this Agreement, and,

NOW THEREFORE, Phil D. Hill, Chairman, is authorized to sign the Agreement forming the DRY-REDWATER REGIONAL WATER AUTHORITY, on behalf of Garfield County.

:Dated this third (3) day of May, 2005.

Phil D Hill

Phil D. Hill, Chairman

Julie A. Jordan

Julie A. Jordan, Vice Chairman

Jerry L. Coldwell

Jerry L. Coldwell

ATTEST: Janet Sherer
Janet Sherer
Clerk and Recorder

#269

RESOLUTION TO AUTHORIZE JOINING AS AN INITIAL MEMBER THE DRY-REDWATER REGIONAL WATER AUTHORITY

WHEREAS, the Town of Richey recognizes the very important need for good quality and quantity of household and livestock water for all residents of Richey, Dawson County, and the surrounding areas, and

WHEREAS, a group of volunteers have worked diligently and with the best interest of the public in mind to find a technically and financially feasible way to provide good quality and quantity of household and livestock water for the area residents, and

WHEREAS, Title 75, Chapter 6, Part 3, M.C.A., the Regional Water and Wastewater Act (the "Act"), allows public agencies to create regional water authorities, and

WHEREAS, in accordance with the Act, a number of local area public agencies desire to join together for the purpose to participate in, coordinate and accomplish the technical and financial feasibility of the project, work to educate the residents of the area as to its findings and to pursue the development, authorization, planning, design and construction of the Dry-Redwater Regional Water Authority system to provide water to rural communities, organizations, businesses and individuals within the Dry-Redwater Regional Water Authority service area, and

WHEREAS, the City Council of the Town of Richey has determined that it is in its own best interest and in the pubic interest that the Agreement Forming the DRY-REDWATER REGIONAL WATER AUTHORITY be executed and that it participate as a member of the public entity (the "Authority") created by this Agreement:

NOW THEREFORE, that John Whiteman Jr., Mayor, is authorized sign the Agreement Forming the DRY-REDWATER REGIONAL WATER AUTHORITY, on behalf of the Town of Richey.

Signed: John W. Whiteman Jr.
Name: John Whiteman, Jr., Mayor Date: 5-3-05

Attested: Teresa Unruh, Clerk

Resolution # 2005-8

RESOLUTION TO AUTHORIZE JOINING AS AN INITIAL MEMBER OF THE DRY-REDWATER REGIONAL WATER AUTHORITY

WHEREAS, the Town of Jordan recognizes the very important need for good quality and quantity of household and livestock water for all residents of Jordan, Garfield County, and the surrounding areas, and

WHEREAS, a group of volunteers have worked diligently and with the best interest of the public in mind to find a technically and financially feasible way to provide good quality and quantity of household and livestock water for the area residents, and

WHEREAS, Title 75, Chapter 6, Part 3, M.C.A. the Regional Water and Wastewater Act (the "Act"), allows public agencies to create regional water authorities, and

WHEREAS, in accordance with the Act, a number of local area public agencies desire to join together for the purpose to participate in, coordinate and accomplish the technical and financial feasibility of the project, work to educate the residents of the area as to its findings and to pursue the development, authorization, planning, design and construction of the Dry-Redwater Regional Water Authority system to provide water to rural communities, organizations, businesses and individuals within the Dry-Redwater Regional Water Authority service area, and

WHEREAS, the Town Council of the Town of Jordan has determined that it is in its own best interest and in the public interest that the Agreement Forming the **DRY-REDWATER REGIONAL WATER AUTHORITY** be executed and that it participate as a member of the public entity (the "Authority") created by this Agreement:

NOW THEREFORE, that Mary Ann Engdahl, Mayor, is authorized to sign the Agreement Forming the DRY-REDWATER REGIONAL WATER AUTHORITY, on behalf of the Town of Jordan.

Signed: Mary Ann Engdahl 5-4-05
Name: Mary Ann Engdahl, Mayor Date

Attested: [signature]
Town Clerk

Appendix B

Area Well Quality Information

Ground-Water Information Center
Montana Bureau of Mines and Geology
Montana Tech of The University of Montana
1300 West Park Street - Main Hall 314
Butte Montana 59701-8997

mbmggwic

6/16/2006
Sign Out

| Home | Well Data | Reports | DrillerWeb | DNRC | Help! |

Overview of MCCONE county

MCCONE get data

Number of wells in County	1495
Deepest well on record (feet)	1,800 00
Shallowest well on record (feet)	6 00
Most recent well on record	6/1/2006
Oldest well on record	1/1/1900
Statewide Monitoring Network wells	10

Histograms for MCCONE county

The table below shows the breakdown of wells reportedly drilled in the county during the last 20 years. Click the "show all" link to display all data available

2006	7
2005	23
2004	4
2003	7
2002	12
2001	20
2000	15
1999	14
1998	13
1997	24
1996	9
1995	7
1994	42
1993	21
1992	22
1991	16
1990	34
1989	15
1988	19
1987	11

Show all years

The table below shows the number of wells that fall between the depth ranges in the left hand column All depths are listed in feet below ground surface.

0 - 99	686
100 - 199	507
200 - 299	192
300 - 399	61
400 - 499	12
500 - 599	3
600 - 699	2
700 - 799	9
800 - 899	5
900 - 999	2
> 1000	16

The table below shows the number of each type of water use that has been reported for wells in this county

DOMESTIC	488
GEOTECH	69
INDUSTRIAL	4
INJECTION	2
IRRIGATION	22
MONITORING	36
OTHER	11
PUBLIC WATER SUPPLY	17
RESEARCH	4
STOCKWATER	1000
TEST WELL	15
UNKNOWN	61
UNUSED	29
* Total	1758

* Number may differ from county total since one well may have several reported **water uses**

Ground-Water Information Center
Montana Bureau of Mines and Geology
Montana Tech of The University of Montana
1300 West Park Street - Main Hall 314
Butte Montana 59701-8997

mbmggwic

6/16/2006
Sign Out

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Overview of GARFIELD county

GARFIELD get data

Number of wells in County	1820
Deepest well on record (feet)	2,286.00
Shallowest well on record (feet)	5.00
Most recent well on record	5/30/2006
Oldest well on record	1/1/1904
Statewide Monitoring Network wells	12

Histograms for GARFIELD county

The table below shows the breakdown of wells reportedly drilled in the county during the last 20 years. Click the "show all" link to display all data available

2006	8
2005	28
2004	28
2003	33
2002	19
2001	23
2000	31
1999	13
1998	12
1997	11
1996	37
1995	10
1994	20
1993	30
1992	24
1991	12
1990	23
1989	7
1988	34
1987	5

Show all years

The table below shows the number of wells that fall between the depth ranges in the left hand column. All depths are listed in feet below ground surface

0 - 99	438
100 - 199	658
200 - 299	389
300 - 399	195
400 - 499	69
500 - 599	22
600 - 699	15
700 - 799	2
800 - 899	3
900 - 999	10
> 1000	19

The table below shows the number of each type of water use that has been reported for wells in this county

COMMERCIAL	2
DOMESTIC	495
FIRE PROTECTION	1
GEOTECH	35
INDUSTRIAL	2
IRRIGATION	14
MONITORING	36
OTHER	1
PUBLIC WATER SUPPLY	12
RECREATION	1
STOCKWATER	1446
TEST WELL	17
UNKNOWN	53
UNUSED	9
* Total	2124

* Number may differ from county total since one well may have several reported **water uses**

Ground-Water Information Center
Site Name: 73 RANCH

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0592 / 2195	**Sample Date:**	9/28/1978
Location (TRS):	18N 30E 19 BBBAD	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 18' 48" N 107° 56' 22" W	**Field Number:**	NGP-340
Datum:	NAD27	**Lab Date:**	1/25/1979
Altitude:	2285.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211JDRV	**Total Depth (ft):**	1,003.000
USGS 7.5' Quad:	NELSON COULEE	**SWL-MP (ft):**	-37 770
PWS Id:		**Depth Water Enters (ft):**	800.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	15 600	0.778	Bicarbonate (HCO3)	737 000	12.079
Magnesium (Mg)	3 900	0.321	Carbonate (CO3)	0.000	0.000
Sodium (Na)	1,524 000	66 294	Chloride (Cl)	188 300	5.312
Potassium (K)	4.200	0 107	Sulfate (SO4)	2,464.000	51.325
Iron (Fe)	0.100	0 005	Nitrate (as N)	<.1	0.000
Manganese (Mn)	0.020	0 001	Fluoride (F)	2 800	0 147
Silica (SiO2)	11.200		Orthophosphate (OPO4)	NR	0 000
Total Cations		67 507	**Total Anions**		68 864

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	0 600	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	270 000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	4,577.170	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	4,951.120	Hardness as CaCO3 (mg/L):	55.010	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	6,500.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	5,966.000	Akalinity as CaCO3 (mg/L):	604 470	Phosphate, TD (mg/L as P):	NR
Field pH:	8 040	Ryznar Stability Index:	6 781	Field Nitrate (mg/L):	NR
Lab pH:	8.270	Sodium Adsorption Ratio:	89.410	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	14.600	Langlier Saturation Index:	0.744	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	120 000	Sulfide Total(mg/L-S)	0.160

Notes

Sample Condition: NGP-340 * LOCATED AT MATTOVICH RANCH *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0592	2195	9/28/1978	73 RANCH	18N 30E 19 BBBAD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	15.600 mg/L	---	---	---
Magnesium (Mg)	3.900 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,524.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	4.200 mg/L	---	---	---
Iron (Fe)	0.100 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	11.200 mg/L	---	---	---
Bicarbonate (HCO3)	737.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	188.300 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	2,464.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<.1 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.800 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	270.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.600 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

may have up to 500 mg/L refer to chart.

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: JORDON JOHN * 5.4 MI S TWIN BUTTES PEAK

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0587 / 2060	**Sample Date:**	10/5/1978
Location (TRS):	16N 44E 04 CDCC	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 9' 51" N 106° 9' 51" W	**Field Number:**	NGP345
Datum:	NAD27	**Lab Date:**	1/25/1979
Altitude:	2677.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125FRUN	**Total Depth (ft):**	280 000
USGS 7.5' Quad:	HEDSTROM LAKE NW 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	9.200	0.459	Bicarbonate (HCO3)	795.000	13.030
Magnesium (Mg)	5.800	0 477	Carbonate (CO3)	0 000	0.000
Sodium (Na)	667 000	29 015	Chloride (Cl)	6 100	0.172
Potassium (K)	2 600	0.067	Sulfate (SO4)	793.000	16.518
Iron (Fe)	0 060	0 003	Nitrate (as N)	0 892	0 064
Manganese (Mn)	0 020	0.001	Fluoride (F)	1 000	0 053
Silica (SiO2)	7 700		Orthophosphate (OPO4)	NR	0.000
Total Cations		30 099	**Total Anions**		29.837

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.5	Vanadium (V):	NR
Boron (B):	710.000	Lithium (Li):	30 000	Strontium (Sr):	510.000	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,885.000	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,288 370	Hardness as CaCO3 (mg/L):	46.850	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,860.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,656.000	Akalinity as CaCO3 (mg/L):	652.040	Phosphate, TD (mg/L as P):	NR
Field pH:	8 120	Ryznar Stability Index:	7 184	Field Nitrate (mg/L):	NR
Lab pH:	8 260	Sodium Adsorption Ratio:	42.400	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	12.000	Langlier Saturation Index:	0.538	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	110.000	Sulfide Total(mg/L-S)	0 110

Notes

Sample Condition:
Field Remarks: NGP345 * OBSTRUCTION AT 203 FT --- NO STATIC LEVEL OBTAINED *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0587	2060	10/5/1978	JORDON JOHN * 5.4 MI S TWIN BUTTES PEAK	16N 44E 04 CDCC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	9.200 mg/L	---	---	---
Magnesium (Mg)	5.800 mg/L	---	2,000 mg/L	---
Sodium (Na)	667.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.600 mg/L	---	---	---
Iron (Fe)	0.060 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.700 mg/L	---	---	---
Bicarbonate (HCO3)	795.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	6.100 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	793.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.892 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	710.000 ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	30.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.5 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	510.000 ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: CLAUSON WILLLIAM * 6 5 MI NW COHAGEN

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0619 / 2053	**Sample Date:**	10/4/1978
Location (TRS):	16N 40E 21 BAAB	**Agency/Sampler:**	USGS / CES
Latitude/Longitude:	47° 8' 1" N 106° 40' 7" W	**Field Number:**	NGP-160
Datum:	NAD27	**Lab Date:**	2/5/1979
Altitude:	2918.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125FRUN	**Total Depth (ft):**	300 000
USGS 7 5' Quad:	YORK RESERVOIR 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	4.300	0.215	Bicarbonate (HCO3)	812 000	13.309
Magnesium (Mg)	2.000	0 165	Carbonate (CO3)	15.400	0.827
Sodium (Na)	502 000	21 837	Chloride (Cl)	2.600	0.073
Potassium (K)	2.200	0 056	Sulfate (SO4)	391.000	8 145
Iron (Fe)	0.060	0.003	Nitrate (as N)	0.600	0 043
Manganese (Mn)	0 020	0.001	Fluoride (F)	1 000	0 053
Silica (SiO2)	9 000		Orthophosphate (OPO4)	NR	0 000
Total Cations		22.276	**Total Anions**		22.449

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	30 000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,330.180	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,742.180	Hardness as CaCO3 (mg/L):	18.970	T P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,000.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,990.000	Akalinity as CaCO3 (mg/L):	691 660	Phosphate, TD (mg/L as P):	NR
Field pH:	8.680	Ryznar Stability Index:	7 573	Field Nitrate (mg/L):	NR
Lab pH:	8 480	Sodium Adsorption Ratio:	50 160	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0.453	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	2,150 000	Sulfide Total(mg/L-S)	0 610

Notes

Sample Condition: NGP-160 * WINDMILL * FORMERLY OWNED BY WEDELL *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0619	2053	10/4/1978	CLAUSON WILLLIAM * 6.5 MI NW COHAGEN	16N 40E 21 BAAB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	4.300 mg/L	---	---	---
Magnesium (Mg)	2.000 mg/L	---	2,000 mg/L	---
Sodium (Na)	502.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.200 mg/L	---	---	---
Iron (Fe)	0.060 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.000 mg/L	---	---	---
Bicarbonate (HCO3)	812.000 mg/L	---	---	---
Carbonate (CO3)	15.400 mg/L	---	---	---
Chloride (Cl)	2.600 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	391.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.600 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	30.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e odor, color, etc) and is not a health standard

Ground-Water Information Center
Site Name: 73 RANCH

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2003Q1190 / 2195	**Sample Date:**	6/26/2003 2:30:00 PM
Location (TRS):	18N 30E 19 BBBAD	**Agency/Sampler:**	MBMG / CWS
Latitude/Longitude:	47° 18' 48" N 107° 56' 22" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	8/6/2003
Altitude:	2285.00	**Lab/Analyst:**	MBMG / KTH
County/State:	GARFIELD / MT	**Sample Method/Handling:**	/ 4230
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211JDRV	**Total Depth (ft):**	1,003 000
USGS 7.5' Quad:	NELSON COULEE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	800 000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	15.900	0.793	Bicarbonate (HCO3)	656 400	10 758
Magnesium (Mg)	3 750	0 309	Carbonate (CO3)	0 000	0 000
Sodium (Na)	1,484 000	64.554	Chloride (Cl)	175 000	4.937
Potassium (K)	4 520	0.116	Sulfate (SO4)	2,346 000	48 867
Iron (Fe)	0 068	0.004	Nitrate (as N)	<2.5 P	0.000
Manganese (Mn)	<0 010	0.000	Fluoride (F)	<5.0	0.000
Silica (SiO2)	9.720		Orthophosphate (OPO4)	<5.0	0.000
	Total Cations	65 917		**Total Anions**	64.562

Trace Element Results (µg/L)

Aluminum (Al):	<300	Cadmium (Cd):	<10	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<20	Chromium (Cr):	<20	Molybdenum (Mo):	<100	Titanium (Ti):	<10
Arsenic (As):	<10	Cobalt (Co):	<20	Nickel (Ni):	<20	Thallium (Tl):	<50
Barium (Ba):	<20	Copper (Cu):	<20	Silver (Ag):	<10	Uranium (U):	<5.0
Beryllium (Be):	<20	Lead (Pb):	<20	Selenium (Se):	<10	Vanadium (V):	<50
Boron (B):	1,222.000	Lithium (Li):	270 000	Strontium (Sr):	1,264 000	Zinc (Zn):	<20
Bromide (Br):	<5000					Zirconium (Zr):	<20

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	4,362 310	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	4,695.360	Hardness as CaCO3 (mg/L):	55 140	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	5,500 000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	5,620 000	Akalinity as CaCO3 (mg/L):	538.360	Phosphate, TD (mg/L as P):	<0.50
Field pH:	8.260	Ryznar Stability Index:	6.915	Field Nitrate (mg/L):	0 500
Lab pH:	8 220	Sodium Adsorption Ratio:	86.960	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	15.400	Langlier Saturation Index:	0.652	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes
Sample Condition: CLEAR
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; ***** = Duplicate analysis not within control limits; ****** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2003Q1190	2195	6/26/2003 2:30:00 PM	73 RANCH	18N 30E 19 BBBAD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	15.900 mg/L	---	---	---
Magnesium (Mg)	3.750 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,484.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	4.520 mg/L	---	---	---
Iron (Fe)	0.068 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<0.010 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.720 mg/L	---	---	---
Bicarbonate (HCO3)	656.400 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	175.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	2,346.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<2.5 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	<5.0 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	<5.0 mg/L	---	---	---
Aluminum (Al)	<300 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<20 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<10 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<20 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,222.000 ug/L	---	---	---
Cadmium (Cd)	<10 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<20 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<20 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<20 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<20 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	270.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<100 ug/L	---	---	5 ug/L
Nickel (Ni)	<20 ug/L	---	---	200 ug/L
Phosphate (P)	<0.50 ug/L	---	---	---
Selenium (Se)	<10 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<10 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	1,264.000 ug/L	---	---	---
Titanium (Ti)	<10 ug/L	---	---	---
Vanadium (V)	<50 ug/L	---	---	---
Zinc (Zn)	<20 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<20 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: GARFIELD COUNTY SCHOOL DISTRICT #15

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2000Q1076 / 147175	**Sample Date:**	5/9/2000 8:34:00 AM
Location (TRS):	18N 42E 09 ABBB	**Agency/Sampler:**	MBMG / MGR
Latitude/Longitude:	47° 20' 18" N 106° 22' 15" W	**Field Number:**	147175
Datum:	NAD27	**Lab Date:**	8/18/2000
Altitude:	2400.00	**Lab/Analyst:**	MBMG / JMC
County/State:	GARFIELD / MT	**Sample Method/Handling:**	PUMPED / 6220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	350.000
USGS 7.5' Quad:	COAL CREEK 7 1/2	**SWL-MP (ft):**	75.170
PWS Id:		**Depth Water Enters (ft):**	310.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	2.660	0.133	Bicarbonate (HCO3)	912.600	14.958
Magnesium (Mg)	0.579	0.048	Carbonate (CO3)	22.800	1.225
Sodium (Na)	447.000	19.445	Chloride (Cl)	78.000	2.200
Potassium (K)	1.350	0.035	Sulfate (SO4)	33.800	0.704
Iron (Fe)	< 05	0.000	Nitrate (as N)	<.5 P	0.000
Manganese (Mn)	<.01	0.000	Fluoride (F)	3.350	0.176
Silica (SiO2)	9.690		Orthophosphate (OPO4)	<.5	0.000
	Total Cations	19.742		**Total Anions**	19.263

Trace Element Results (µg/L)

Aluminum (Al):	<30	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<2	Chromium (Cr):	<2	Molybdenum (Mo):	13.400	Titanium (Ti):	<100
Arsenic (As):	1.130	Cobalt (Co):	<2	Nickel (Ni):	<2	Thallium (Tl):	<5
Barium (Ba):	80.100	Copper (Cu):	5.600	Silver (Ag):	<1	Uranium (U):	NR
Beryllium (Be):	<2	Lead (Pb):	<2	Selenium (Se):	3.450	Vanadium (V):	<5
Boron (B):	867.000	Lithium (Li):	52.000	Strontium (Sr):	86.700	Zinc (Zn):	2.150
Bromide (Br):	721.000					Zirconium (Zr):	<50

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,048.790	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,511.840	Hardness as CaCO3 (mg/L):	9.030	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,747.000	Field Alkalinity as CaCO3 (mg/L):	792.000	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,618.000	Akalinity as CaCO3 (mg/L):	786.520	Phosphate, TD (mg/L as P):	<1.0
Field pH:	8.620	Ryznar Stability Index:	7.839	Field Nitrate (mg/L):	0.000
Lab pH:	8.520	Sodium Adsorption Ratio:	64.730	Field Dissolved O2 (mg/L):	0.110
Water Temp (°C):	12.100	Langlier Saturation Index:	0.341	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: CLEAR
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2000Q1076	147175	5/9/2000 8:34:00 AM	GARFIELD COUNTY SCHOOL DISTRICT #15	18N 42E 09 ABBB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	2.660 mg/L	---	---	---
Magnesium (Mg)	0.579 mg/L	---	2,000 mg/L	---
Sodium (Na)	447.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.350 mg/L	---	---	---
Iron (Fe)	<.05 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.690 mg/L	---	---	---
Bicarbonate (HCO3)	912.600 mg/L	---	---	---
Carbonate (CO3)	22.800 mg/L	---	---	---
Chloride (Cl)	78.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	33.800 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<.5 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	3.350 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	<.5 mg/L	---	---	---
Aluminum (Al)	<30 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<2 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	1.130 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	80.100 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	867.000 ug/L	---	---	---
Cadmium (Cd)	<2 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	5.600 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<2 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	52.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	13.400 ug/L	---	---	5 ug/L
Nickel (Ni)	<2 ug/L	---	---	200 ug/L
Phosphate (P)	<1.0 ug/L	---	---	---
Selenium (Se)	3.450 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<1 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	86.700 ug/L	---	---	---
Titanium (Ti)	<100 ug/L	---	---	---
Vanadium (V)	<5 ug/L	---	---	---
Zinc (Zn)	2.150 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<50 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: BIG DRY SCHOOLHOUSE

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2005Q0493 / 31041	**Sample Date:**	5/5/2005 3:40:00 PM
Location (TRS):	17N 35E 25 CCCC	**Agency/Sampler:**	MBMG / CWS
Latitude/Longitude:	47° 11' 45" N 107° 12' 35" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	5/26/2005
Altitude:	3060.00	**Lab/Analyst:**	MBMG / WO
County/State:	GARFIELD / MT	**Sample Method/Handling:**	PUMPED / 4230
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	700.000
USGS 7.5' Quad:	SMOKY BUTTE CREEK	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	593.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	5.300	0.264	Bicarbonate (HCO3)	378.200	6.199
Magnesium (Mg)	1.380	0.114	Carbonate (CO3)	24.000	1.289
Sodium (Na)	625.000	27.188	Chloride (Cl)	21.100	0.595
Potassium (K)	1.700	0.043	Sulfate (SO4)	916.000	19.080
Iron (Fe)	0.064	0.003	Nitrate (as N)	<1.0 P	0.000
Manganese (Mn)	0.018	0.001	Fluoride (F)	<0.5	0.000
Silica (SiO2)	7.940		Orthophosphate (OPO4)	<0.5	0.000
Total Cations		27.649	**Total Anions**		27.163

Trace Element Results (µg/L)

Aluminum (Al):	<30	Cadmium (Cd):	<1	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<10	Chromium (Cr):	<10	Molybdenum (Mo):	<10	Titanium (Ti):	<1
Arsenic (As):	<5	Cobalt (Co):	<2	Nickel (Ni):	<2	Thallium (Tl):	<25
Barium (Ba):	6.030	Copper (Cu):	<5	Silver (Ag):	<5	Uranium (U):	<2.5
Beryllium (Be):	<2	Lead (Pb):	<10	Selenium (Se):	<5	Vanadium (V):	<10
Boron (B):	317.000	Lithium (Li):	81.000	Strontium (Sr):	273.000	Zinc (Zn):	<2
Bromide (Br):	<500					Zirconium (Zr):	<2

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,788.810	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,980.700	Hardness as CaCO3 (mg/L):	18.910	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,020.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,540.000	Akalinity as CaCO3 (mg/L):	350.220	Phosphate, TD (mg/L as P):	<0.05
Field pH:	7.720	Ryznar Stability Index:	7.573	Field Nitrate (mg/L):	NR
Lab pH:	8.890	Sodium Adsorption Ratio:	62.540	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	12.900	Langlier Saturation Index:	0.659	Field Chloride (mg/L):	NR
Air Temp (°C):	24.000	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes
Sample Condition: CLEAR
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2005Q0493	31041	5/5/2005 3:40:00 PM	BIG DRY SCHOOLHOUSE	17N 35E 25 CCCC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	5.300 mg/L	---	---	---
Magnesium (Mg)	1.380 mg/L	---	2,000 mg/L	---
Sodium (Na)	625.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.700 mg/L	---	---	---
Iron (Fe)	0.064 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.018 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.940 mg/L	---	---	---
Bicarbonate (HCO3)	378.200 mg/L	---	---	---
Carbonate (CO3)	24.000 mg/L	---	---	---
Chloride (Cl)	21.100 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	916.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<1.0 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	<0.5 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	<0.5 mg/L	---	---	---
Aluminum (Al)	<30 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<10 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<5 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	6.030 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	317.000 ug/L	---	---	---
Cadmium (Cd)	<1 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<10 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<5 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<10 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	81.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<10 ug/L	---	---	5 ug/L
Nickel (Ni)	<2 ug/L	---	---	200 ug/L
Phosphate (P)	<0.05 ug/L	---	---	---
Selenium (Se)	<5 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<5 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	273.000 ug/L	---	---	---
Titanium (Ti)	<1 ug/L	---	---	---
Vanadium (V)	<10 ug/L	---	---	---
Zinc (Zn)	<2 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<2 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc) and is not a health standard.

Ground-Water Information Center
Site Name: MCKERLICK JOHN * 13.7 MI S FLAT CR SCH

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1976Q1158 / 2480	**Sample Date:**	9/1/1976 3:00:00 PM
Location (TRS):	20N 42E 22 CABD	**Agency/Sampler:**	USGS / BAM
Latitude/Longitude:	47° 28' 32" N 106° 21' 14" W	**Field Number:**	FU-879
Datum:	NAD27	**Lab Date:**	11/8/1976
Altitude:	2400.00	**Lab/Analyst:**	MBMG / LAW
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK	**Total Depth (ft):**	80.000
USGS 7.5' Quad:	FRANK COULEE 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	4.000	0.200	Bicarbonate (HCO3)	700.200	11.476
Magnesium (Mg)	1.100	0.091	Carbonate (CO3)	0.000	0.000
Sodium (Na)	586.000	25.491	Chloride (Cl)	27.000	0.762
Potassium (K)	1.600	0.041	Sulfate (SO4)	627.800	13.077
Iron (Fe)	0.240	0.013	Nitrate (as N)	0.400	0.029
Manganese (Mn)	0.010	0.000	Fluoride (F)	2.000	0.105
Silica (SiO2)	8.300		Orthophosphate (OPO4)	NR	0.000
Total Cations		25.835	**Total Anions**		25.449

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	100.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,603.380	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,958.650	Hardness as CaCO3 (mg/L):	14.520	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,755.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,511.000	Akalinity as CaCO3 (mg/L):	574.280	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	8.318	Field Nitrate (mg/L):	NR
Lab pH:	7.960	Sodium Adsorption Ratio:	66.930	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	-0.179	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Filt.Acid H2O(mg/L)	0.240	Iron Filt. Water (mg/L)	L.01	Iron Tr (mg/L-Fe)	6.350

Notes

Sample Condition:
Field Remarks: SHALLOW GW * SMALL AMOUNT OF IRON * WELL MAY PENETRATE TO 211HLCK *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1976Q1158	2480	9/1/1976 3:00:00 PM	MCKERLICK JOHN * 13.7 MI S FLAT CR. SCH	20N 42E 22 CABD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	4.000 mg/L	---	---	---
Magnesium (Mg)	1.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	586.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.600 mg/L	---	---	---
Iron (Fe)	0.240 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.010 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.300 mg/L	---	---	---
Bicarbonate (HCO3)	700.200 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	27.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	627.800 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.400 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	100.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: BURGESS RANCH * 1 MI SE BURGESS SCHOOL

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0537 / 2479	**Sample Date:**	9/26/1978
Location (TRS):	20N 41E 26 ABAD	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 28' 8" N 106° 27' 9" W	**Field Number:**	NGP-338
Datum:	NAD27	**Lab Date:**	1/19/1979
Altitude:	2400.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211HLCK	**Total Depth (ft):**	365 000
USGS 7.5' Quad:	HAGEN GAP 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	0.900	0.045	Bicarbonate (HCO3)	271.000	4 442
Magnesium (Mg)	0.200	0.016	Carbonate (CO3)	312 000	16 761
Sodium (Na)	670.000	29 145	Chloride (Cl)	3.200	0 090
Potassium (K)	1.700	0.043	Sulfate (SO4)	681.000	14 185
Iron (Fe)	0.030	0.002	Nitrate (as N)	0.100	0.007
Manganese (Mn)	<.01	0.000	Fluoride (F)	1.000	0 053
Silica (SiO2)	2.800		Orthophosphate (OPO4)	NR	0 000
Total Cations		29 251	**Total Anions**		35.538

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.1	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	60 000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,806 430	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,943 930	Hardness as CaCO3 (mg/L):	3.070	T.P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,050 000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,878.000	Akalinity as CaCO3 (mg/L):	742.650	Phosphate, TD (mg/L as P):	NR
Field pH:	10.100	Ryznar Stability Index:	7 260	Field Nitrate (mg/L):	NR
Lab pH:	10 090	Sodium Adsorption Ratio:	166.410	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.200	Langlier Saturation Index:	1.415	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	7,900 000	Sulfide Total(mg/L-S)	1.200

Notes

Sample Condition: NGP-338 * WELL IN PUMP HOUSE NEAR A DESERTED HOMESTEAD *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0537	2479	9/26/1978	BURGESS RANCH * 1 MI SE BURGESS SCHOOL.	20N 41E 26 ABAD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	0.900 mg/L	---	---	---
Magnesium (Mg)	0.200 mg/L	---	2,000 mg/L	---
Sodium (Na)	670.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.700 mg/L	---	---	---
Iron (Fe)	0.030 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	2.800 mg/L	---	---	---
Bicarbonate (HCO3)	271.000 mg/L	---	---	---
Carbonate (CO3)	312.000 mg/L	---	---	---
Chloride (Cl)	3.200 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	681.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.100 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	60.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: BAKER JIM * 5 MI S HELL CREEK SCHOOL

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0598 / 2476	**Sample Date:**	10/10/1978
Location (TRS):	20N 36E 27 CCA	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 27' 22" N 107° 7' 25" W	**Field Number:**	NGP-351
Datum:	NAD27	**Lab Date:**	2/5/1979
Altitude:	2900.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211HLCK	**Total Depth (ft):**	390 000
USGS 7.5' Quad:	JORDAN	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	16 100	0 803	Bicarbonate (HCO3)	1,052 000	17.242
Magnesium (Mg)	4 300	0 354	Carbonate (CO3)	0 000	0.000
Sodium (Na)	979.000	42.587	Chloride (Cl)	7 000	0.197
Potassium (K)	3 000	0 077	Sulfate (SO4)	1,241 000	25.850
Iron (Fe)	0 120	0 006	Nitrate (as N)	1 500	0.107
Manganese (Mn)	0.030	0.001	Fluoride (F)	1.000	0.053
Silica (SiO2)	9.200		Orthophosphate (OPO4)	NR	0.000
Total Cations		43 828	**Total Anions**		43 450

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	0 100	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	130.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,780.480	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,314.250	Hardness as CaCO3 (mg/L):	57.900	T.P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	4,200.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,900.000	Akalinity as CaCO3 (mg/L):	862 820	Phosphate, TD (mg/L as P):	NR
Field pH:	7.990	Ryznar Stability Index:	6.515	Field Nitrate (mg/L):	NR
Lab pH:	8.200	Sodium Adsorption Ratio:	55.990	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.000	Langlier Saturation Index:	0.843	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	760.000	Sulfide Total(mg/L-S)	0 360

Notes

Sample Condition: NGP-351 * WELL SE OF HOUSE *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC
Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0598	2476	10/10/1978	BAKER JIM * 5 MI S HELL CREEK SCHOOL	20N 36E 27 CCA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	16.100 mg/L	---	---	---
Magnesium (Mg)	4.300 mg/L	---	2,000 mg/L	---
Sodium (Na)	979.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.000 mg/L	---	---	---
Iron (Fe)	0.120 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.030 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.200 mg/L	---	---	---
Bicarbonate (HCO3)	1,052.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	7.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,241.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	1.500 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	130.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.100 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: HOVERSON SARAH * 3.5 MI S BILLINGS SCH

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0552 / 2341	**Sample Date:**	9/26/1978
Location (TRS):	19N 42E 33 BBCB	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 21' 59" N 106° 22' 55" W	**Field Number:**	NGP336
Datum:	NAD27	**Lab Date:**	2/20/1979
Altitude:	2485.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211HLCK	**Total Depth (ft):**	370.000
USGS 7.5' Quad:	MAXWELL COULEE 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	300.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	20.400	1.018	Bicarbonate (HCO3)	1,247.000	20.438
Magnesium (Mg)	7.100	0.584	Carbonate (CO3)	27.400	1.472
Sodium (Na)	1,062.000	46.197	Chloride (Cl)	40.600	1.145
Potassium (K)	3.600	0.092	Sulfate (SO4)	1,210.000	25.204
Iron (Fe)	0.030	0.002	Nitrate (as N)	2.090	0.149
Manganese (Mn)	0.030	0.001	Fluoride (F)	1.500	0.079
Silica (SiO2)	7.900		Orthophosphate (OPO4)	NR	0.000
Total Cations		47.964	**Total Anions**		48.488

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	90.000	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	0.500	Vanadium (V):	NR
Boron (B):	520.000	Lithium (Li):	110.000	Strontium (Sr):	980.000	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,996.940	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,629.650	Hardness as CaCO3 (mg/L):	80.160	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,190.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	4,171.000	Akalinity as CaCO3 (mg/L):	1,068.450	Phosphate, TD (mg/L as P):	NR
Field pH:	8.430	Ryznar Stability Index:	5.683	Field Nitrate (mg/L):	NR
Lab pH:	8.640	Sodium Adsorption Ratio:	51.620	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	12.600	Langlier Saturation Index:	1.478	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (mg/L-Fe)	1.280	Sulfide Total(mg/L-S)	1.170

Notes

Sample Condition:
Field Remarks: NGP336 *
Lab Remarks: RU SC 2336; FU SC 4171; SCDFM 3190; BOTTLES ARE STRATIFIED *

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U S Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0552	2341	9/26/1978	HOVERSON SARAH * 3.5 MI S BILLINGS SCH	19N 42E 33 BBCB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	20.400 mg/L	---	---	---
Magnesium (Mg)	7.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,062.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.600 mg/L	---	---	---
Iron (Fe)	0.030 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.030 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.900 mg/L	---	---	---
Bicarbonate (HCO3)	1,247.000 mg/L	---	---	---
Carbonate (CO3)	27.400 mg/L	---	---	---
Chloride (Cl)	40.600 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,210.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	2.090 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.500 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	90.000 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	520.000 ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	110.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.500 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	980.000 ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc) and is not a health standard

Ground-Water Information Center
Site Name: HAFLA JOE * 1.1 MI W HAFLA SCHOOL

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0611 / 2055	**Sample Date:**	10/6/1978
Location (TRS):	16N 42E 08 DCCB	**Agency/Sampler:**	USGS / CES
Latitude/Longitude:	47° 9' 0" N 106° 26' 2" W	**Field Number:**	NGP-165
Datum:	NAD27	**Lab Date:**	2/5/1979
Altitude:	2750.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125FRUN	**Total Depth (ft):**	258.000
USGS 7.5' Quad:	HAFLA SCHOOL 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	158.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	39.000	1.946	Bicarbonate (HCO3)	886.000	14.522
Magnesium (Mg)	34.100	2.806	Carbonate (CO3)	0.000	0.000
Sodium (Na)	544.000	23.664	Chloride (Cl)	5.300	0.150
Potassium (K)	5.300	0.136	Sulfate (SO4)	657.000	13.685
Iron (Fe)	2.410	0.129	Nitrate (as N)	0.800	0.057
Manganese (Mn)	0.040	0.001	Fluoride (F)	0.100	0.005
Silica (SiO2)	9.000		Orthophosphate (OPO4)	NR	0.000
	Total Cations	28.683		**Total Anions**	28.419

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	0.100	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	50.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,733.500	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,183.050	Hardness as CaCO3 (mg/L):	237.740	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,230.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,789.000	Akalinity as CaCO3 (mg/L):	726.670	Phosphate, TD (mg/L as P):	NR
Field pH:	8.020	Ryznar Stability Index:	5.995	Field Nitrate (mg/L):	NR
Lab pH:	8.100	Sodium Adsorption Ratio:	15.350	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	9.200	Langlier Saturation Index:	1.052	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	2,770.000	Sulfide Total(mg/L-S)	0.310

Notes

Sample Condition: NGP-165 * DEPTH MEASUREMENTS NOT FEASIBLE *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0611	2055	10/6/1978	HAFLA JOE * 1.1 MI W HAFLA SCHOOL	16N 42E 08 DCCB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	39.000 mg/L	---	---	---
Magnesium (Mg)	34.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	544.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	5.300 mg/L	---	---	---
Iron (Fe)	2.410 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.040 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.000 mg/L	---	---	---
Bicarbonate (HCO3)	886.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	5.300 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	657.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.800 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	50.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.100 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e. odor, color, etc) and is not a health standard

Ground-Water Information Center
Site Name: PLUHAR PHILLIP * 8.25 MI NE COGAHEN

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0623 / 2054	**Sample Date:**	10/5/1978
Location (TRS):	16N 41E 20 BABB	**Agency/Sampler:**	USGS / CES
Latitude/Longitude:	47° 8' 0" N 106° 33' 57" W	**Field Number:**	NGP-163
Datum:	NAD27	**Lab Date:**	2/23/1979
Altitude:	2800.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125FRUN	**Total Depth (ft):**	255.000
USGS 7.5' Quad:	COHAGEN NE 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	190 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	5 400	0.269	Bicarbonate (HCO3)	688 000	11.276
Magnesium (Mg)	2 600	0.214	Carbonate (CO3)	3 400	0.183
Sodium (Na)	460 000	20 010	Chloride (Cl)	8 800	0.248
Potassium (K)	2 500	0.064	Sulfate (SO4)	424 000	8.832
Iron (Fe)	0.320	0 017	Nitrate (as N)	0 600	0.043
Manganese (Mn)	<.01	0 000	Fluoride (F)	0.300	0.016
Silica (SiO2)	12 400		Orthophosphate (OPO4)	NR	0.000
Total Cations		20.575	**Total Anions**		20.598

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	40.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,259.240	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,608.320	Hardness as CaCO3 (mg/L):	24.190	T P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,800.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,847.000	Akalinity as CaCO3 (mg/L):	569 950	Phosphate, TD (mg/L as P):	NR
Field pH:	8 210	Ryznar Stability Index:	7.654	Field Nitrate (mg/L):	NR
Lab pH:	8.370	Sodium Adsorption Ratio:	40 700	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.500	Langlier Saturation Index:	0.358	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (mg/L-Fe)	0.550	Sulfide Total(mg/L-S)	0 310

Notes
Sample Condition: NGP-163
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0623	2054	10/5/1978	PLUHAR PHILLIP * 8.25 MI NE COGAHEN	16N 41E 20 BABB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	5.400 mg/L	---	---	---
Magnesium (Mg)	2.600 mg/L	---	2,000 mg/L	---
Sodium (Na)	460.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.500 mg/L	---	---	---
Iron (Fe)	0.320 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	12.400 mg/L	---	---	---
Bicarbonate (HCO3)	688.000 mg/L	---	---	---
Carbonate (CO3)	3.400 mg/L	---	---	---
Chloride (Cl)	8.800 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	424.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.600 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.300 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	40.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: KEEBLER DEAN * 2 7 MI NE BENZIEN

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0590 / 2120	**Sample Date:**	9/29/1978
Location (TRS):	17N 32E 04 AABB	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 16' 21" N 107° 37' 38" W	**Field Number:**	NGP-342
Datum:	NAD27	**Lab Date:**	1/25/1979
Altitude:	2820 00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	600.000
USGS 7.5' Quad:	BENZIEN 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	220 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	5 500	0 274	Bicarbonate (HCO3)	618.000	10 129
Magnesium (Mg)	1 200	0 099	Carbonate (CO3)	3.400	0 183
Sodium (Na)	592.000	25 752	Chloride (Cl)	5.100	0 144
Potassium (K)	1.500	0.038	Sulfate (SO4)	748.000	15 581
Iron (Fe)	0.160	0.009	Nitrate (as N)	0.800	0 057
Manganese (Mn)	0.020	0.001	Fluoride (F)	1 400	0.074
Silica (SiO2)	8.400		Orthophosphate (OPO4)	NR	0.000
Total Cations		26 173	**Total Anions**		26.167

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.1	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	90.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,671.910	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,985 480	Hardness as CaCO3 (mg/L):	18 670	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,430.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,358.000	Akalinity as CaCO3 (mg/L):	512 540	Phosphate, TD (mg/L as P):	NR
Field pH:	8.430	Ryznar Stability Index:	7 780	Field Nitrate (mg/L):	NR
Lab pH:	8.320	Sodium Adsorption Ratio:	59.610	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	12.300	Langlier Saturation Index:	0 270	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	2,070.000	Sulfide Total(mg/L-S)	0.140

Notes
Sample Condition: NGP-342
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC
Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0590	2120	9/29/1978	KEEBLER DEAN * 2.7 MI NE BENZIEN	17N 32E 04 AABB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	5.500 mg/L	---	---	---
Magnesium (Mg)	1.200 mg/L	---	2,000 mg/L	---
Sodium (Na)	592.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.500 mg/L	---	---	---
Iron (Fe)	0.160 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.400 mg/L	---	---	---
Bicarbonate (HCO3)	618.000 mg/L	---	---	---
Carbonate (CO3)	3.400 mg/L	---	---	---
Chloride (Cl)	5.100 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	748.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.800 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.400 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	90.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: LANDERS H * 9 MI N SAND SPRINGS MT

Water Quality Report
Report Date: 6/7/2006
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0588 / 2121	**Sample Date:**	9/29/1978
Location (TRS):	17N 33E 19 DBBC	**Agency/Sampler:**	USGS / KPK
Latitude/Longitude:	47° 13' 13" N 107° 32' 54" W	**Field Number:**	NGP343
Datum:	NAD27	**Lab Date:**	1/29/1979
Altitude:	2990.00	**Lab/Analyst:**	MBMG / FNA
County/State:	GARFIELD / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	TOTAL RECOVERABLE
Geology:	211HLCK	**Total Depth (ft):**	380.000
USGS 7.5' Quad:	COFFIN BUTTE 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	280.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	11.100	0.554	Bicarbonate (HCO3)	612.000	10.031
Magnesium (Mg)	5.600	0.461	Carbonate (CO3)	3.800	0.204
Sodium (Na)	587.000	25.535	Chloride (Cl)	3.800	0.107
Potassium (K)	2.000	0.051	Sulfate (SO4)	764.000	15.914
Iron (Fe)	<.01	0.000	Nitrate (as N)	0.621	0.044
Manganese (Mn)	0.020	0.001	Fluoride (F)	1.100	0.058
Silica (SiO2)	8.400		Orthophosphate (OPO4)	NR	0.000
Total Cations		26.638	**Total Anions**		26.358

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.5	Vanadium (V):	NR
Boron (B):	300.000	Lithium (Li):	80.000	Strontium (Sr):	420.000	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,688.920	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,999.440	Hardness as CaCO3 (mg/L):	50.770	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,530.000	Field Alkalinity as CaCO3 (mg/L):	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,459.000	Akalinity as CaCO3 (mg/L):	508.280	Phosphate, TD (mg/L as P):	NR
Field pH:	7.910	Ryznar Stability Index:	7.157	Field Nitrate (mg/L):	NR
Lab pH:	8.340	Sodium Adsorption Ratio:	35.840	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.300	Langlier Saturation Index:	0.591	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Filt. Water (mg/L)	L.01	Iron Tr (ug/L-Fe)	90.000	Sulfide Total(mg/L-S)	0.190

Notes

Sample Condition:
Field Remarks: NGP343 * OWNER--SAND SPRINGS MT 59077
Lab Remarks: TRACE METALS RUN ON RA SAMPLE * NO FA SAMPLE

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Detected above MDL but less than MRL; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Analyzed for but not detected above MDL; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0588	2121	9/29/1978	LANDERS H * 9 MI N SAND SPRINGS MT	17N 33E 19 DBBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	11.100 mg/L	---	---	---
Magnesium (Mg)	5.600 mg/L	---	2,000 mg/L	---
Sodium (Na)	587.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.000 mg/L	---	---	---
Iron (Fe)	<.01 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.400 mg/L	---	---	---
Bicarbonate (HCO3)	612.000 mg/L	---	---	---
Carbonate (CO3)	3.800 mg/L	---	---	---
Chloride (Cl)	3.800 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	764.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.621 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	300.000 ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	80.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.5 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	420.000 ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

MPRS

Ground-Water Information Center
Site Name: CITY OF CIRCLE

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2000Q1074 / 136073	**Sample Date:**	5/8/2000 9:40:00 AM
Location (TRS):	19N 48E 10 CCCAD	**Agency/Sampler:**	MBMG / MGR
Latitude/Longitude:	47° 24' 50" N 105° 35' 40" W	**Field Number:**	136073
Datum:	NAD27	**Lab Date:**	8/18/2000
Altitude:	2517.00	**Lab/Analyst:**	MBMG / JMC
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 6220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	1,624 000
USGS 7.5' Quad:	CIRCLE	**SWL-MP (ft):**	NR
PWS Id:	00176003	**Depth Water Enters (ft):**	NR
Project:	PWSINV, RADON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	3.740	0.187	Bicarbonate (HCO3)	907.700	14 877
Magnesium (Mg)	0 480	0.039	Carbonate (CO3)	28.800	1.547
Sodium (Na)	412.000	17 922	Chloride (Cl)	91.200	2 573
Potassium (K)	1 350	0.035	Sulfate (SO4)	<25.0	0.000
Iron (Fe)	0.043	0 002	Nitrate (as N)	<.5 P	0 000
Manganese (Mn)	<.01	0 000	Fluoride (F)	4 310	0.227
Silica (SiO2)	11.700		Orthophosphate (OPO4)	1 150	0.036
Total Cations		18.310	**Total Anions**		19.260

Trace Element Results (µg/L)

Aluminum (Al):	73.300	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<2	Chromium (Cr):	<2	Molybdenum (Mo):	<10	Titanium (Ti):	<100
Arsenic (As):	1 620	Cobalt (Co):	<2	Nickel (Ni):	<2	Thallium (Tl):	<5
Barium (Ba):	30 700	Copper (Cu):	13 700	Silver (Ag):	<1	Uranium (U):	NR
Beryllium (Be):	<2	Lead (Pb):	<2	Selenium (Se):	4.230	Vanadium (V):	<5
Boron (B):	1,240.000	Lithium (Li):	56.000	Strontium (Sr):	60.900	Zinc (Zn):	13.000
Bromide (Br):	<500					Zirconium (Zr):	<50

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,002.020	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,462.570	Hardness as CaCO3:	11.310	T P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	800.000	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,640.000	Akalinity as CaCO3:	792.500	Phosphate, TD (mg/L as P):	1.550
Field pH:	8.510	Ryznar Stability Index:	7.546	Field Nitrate (mg/L):	0.000
Lab pH:	8 510	Sodium Adsorption Ratio:	53.290	Field Dissolved O2 (mg/L):	8.510
Water Temp (°C):	22.000	Langlier Saturation Index:	0 482	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: CLEAR
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2000Q1074	136073	5/8/2000 9:40:00 AM	CITY OF CIRCLE	19N 48E 10 CCCAD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	3.740 mg/L	---	---	---
Magnesium (Mg)	0.480 mg/L	---	2,000 mg/L	---
Sodium (Na)	412.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.350 mg/L	---	---	---
Iron (Fe)	0.043 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	11.700 mg/L	---	---	---
Bicarbonate (HCO3)	907.700 mg/L	---	---	---
Carbonate (CO3)	28.800 mg/L	---	---	---
Chloride (Cl)	91.200 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	<25.0 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<.5 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	4.310 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	1.150 mg/L	---	---	---
Aluminum (Al)	73.300 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<2 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	1.620 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	30.700 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,240.000 ug/L	---	---	---
Cadmium (Cd)	<2 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	13.700 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<2 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	56.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<10 ug/L	---	---	5 ug/L
Nickel (Ni)	<2 ug/L	---	---	200 ug/L
Phosphate (P)	1.550 ug/L	---	---	---
Selenium (Se)	4.230 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<1 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	60.900 ug/L	---	---	---
Titanium (Ti)	<100 ug/L	---	---	---
Vanadium (V)	<5 ug/L	---	---	---
Zinc (Zn)	13.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<50 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: CITY OF CIRCLE * WELL NO. 1 (1954)

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2005Q0089 / 138134	**Sample Date:**	8/11/2004 5:15:00 PM
Location (TRS):	19N 48E 10 DBDA	**Agency/Sampler:**	MBMG / CWS
Latitude/Longitude:	47° 25' 4" N 105° 34' 55" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	9/13/2004
Altitude:	2430.00	**Lab/Analyst:**	MBMG / WO
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4230
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125FRUN	**Total Depth (ft):**	150.000
USGS 7.5' Quad:	CIRCLE 7 1/2	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	103.500
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	23.500	1.173	Bicarbonate (HCO3)	829 600	13 597
Magnesium (Mg)	19.100	1.572	Carbonate (CO3)	18 000	0 967
Sodium (Na)	775.000	33.713	Chloride (Cl)	<5.0	0.000
Potassium (K)	3.870	0.099	Sulfate (SO4)	1,059.000	22.059
Iron (Fe)	0.227	0.012	Nitrate (as N)	<1.25 P	0.000
Manganese (Mn)	0.026	0.001	Fluoride (F)	2 550	0.134
Silica (SiO2)	7.500		Orthophosphate (OPO4)	<0 50	0.000
Total Cations		36 627	**Total Anions**		36.757

Trace Element Results (µg/L)

Aluminum (Al):	<50	Cadmium (Cd):	<5	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<10	Chromium (Cr):	<10	Molybdenum (Mo):	<50	Titanium (Ti):	<5
Arsenic (As):	<5	Cobalt (Co):	<10	Nickel (Ni):	<10	Thallium (Tl):	<25
Barium (Ba):	<10	Copper (Cu):	<10	Silver (Ag):	<5	Uranium (U):	<3
Beryllium (Be):	<10	Lead (Pb):	<10	Selenium (Se):	<5	Vanadium (V):	<25
Boron (B):	302.000	Lithium (Li):	52.700	Strontium (Sr):	1,334.000	Zinc (Zn):	<10
Bromide (Br):	<500					Zirconium (Zr):	<10

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,317.440	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,738.370	Hardness as CaCO3:	137 300	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,040.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,130.000	Akalinity as CaCO3:	710 440	Phosphate, TD (mg/L as P):	<0.25
Field pH:	8.180	Ryznar Stability Index:	6.115	Field Nitrate (mg/L):	NR
Lab pH:	8.440	Sodium Adsorption Ratio:	28.780	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.900	Langlier Saturation Index:	1.163	Field Chloride (mg/L):	NR
Air Temp (°C):	28.000	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: CLEAR/DARK/FILM ON TOP SMELLS LIKE OIL/DIESEL
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2005Q0089	138134	8/11/2004 5:15:00 PM	CITY OF CIRCLE * WELL NO. 1 (1954)	19N 48E 10 DBDA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	23.500 mg/L	---	---	---
Magnesium (Mg)	19.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	775.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.870 mg/L	---	---	---
Iron (Fe)	0.227 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.026 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.500 mg/L	---	---	---
Bicarbonate (HCO3)	829.600 mg/L	---	---	---
Carbonate (CO3)	18.000 mg/L	---	---	---
Chloride (Cl)	<5.0 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,059.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<1.25 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.550 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	<0.50 mg/L	---	---	---
Aluminum (Al)	<50 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<10 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<5 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<10 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	302.000 ug/L	---	---	---
Cadmium (Cd)	<5 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<10 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<10 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<10 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<10 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	52.700 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<50 ug/L	---	---	5 ug/L
Nickel (Ni)	<10 ug/L	---	---	200 ug/L
Phosphate (P)	<0.25 ug/L	---	---	---
Selenium (Se)	<5 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<5 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	1,334.000 ug/L	---	---	---
Titanium (Ti)	<5 ug/L	---	---	---
Vanadium (V)	<25 ug/L	---	---	---
Zinc (Zn)	<10 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<10 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: CITY OF CIRCLE

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id: 1972Q5005 / 32476
Location (TRS): 19N 48E 10 DACA
Latitude/Longitude: 47° 25' 5" N 105° 34' 44" W
Datum: NAD27
Altitude: 2433.10
County/State: MCCONE / MT
Site Type: WELL
Geology: 211FHHC
USGS 7.5' Quad: CIRCLE
PWS Id: 00176002
Project: GWAAMON, GWCP01, PWSINV, RADON

Sample Date: 6/19/1972
Agency/Sampler: PRIV /
Field Number:
Lab Date: 7/3/1972
Lab/Analyst: DHES /
Sample Method/Handling: /
Procedure Type: DISSOLVED
Total Depth (ft): 1,508 000
SWL-MP (ft): NR
Depth Water Enters (ft): 1,298 000

Major Ion Results

	mg/L	meq/L
Calcium (Ca)	2 000	0 100
Magnesium (Mg)	< 1	0 000
Sodium (Na)	400 K	0.000
Potassium (K)	NR	0.000
Iron (Fe)	0 920	0.049
Manganese (Mn)	NR	0.000
Silica (SiO2)	NR	
Total Cations		0.149

	mg/L	meq/L
Bicarbonate (HCO3)	921 000	15 095
Carbonate (CO3)	34 000	1 826
Chloride (Cl)	109 000	3 075
Sulfate (SO4)	< 1	0 000
Nitrate (as N)	< 1	0 000
Fluoride (F)	5 200	0 274
Orthophosphate (OPO4)	NR	0 000
Total Anions		20 270

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,004 810	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,472 120	Hardness as CaCO3:	4 990	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	NR	Akalinity as CaCO3:	812 090	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	0 000	Field Nitrate (mg/L):	NR
Lab pH:	NR	Sodium Adsorption Ratio:	77 890	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	NR	Langlier Saturation Index:	0.000	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes
Sample Condition:
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1972Q5005	32476	6/19/1972	CITY OF CIRCLE	19N 48E 10 DACA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	2.000 mg/L	---	---	---
Magnesium (Mg)	<.1 mg/L	---	2,000 mg/L	---
Sodium (Na)	400 K mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	NR mg/L	---	---	---
Iron (Fe)	0.920 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	NR mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	NR mg/L	---	---	---
Bicarbonate (HCO3)	921.000 mg/L	---	---	---
Carbonate (CO3)	34.000 mg/L	---	---	---
Chloride (Cl)	109.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	<.1 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<.1 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	5.200 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: CITY OF CIRCLE

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id: 1996Q0121 / 32476
Location (TRS): 19N 48E 10 DACA
Latitude/Longitude: 47° 25' 5" N 105° 34' 44" W
Datum: NAD27
Altitude: 2433.10
County/State: MCCONE / MT
Site Type: WELL
Geology: 211FHHC
USGS 7.5' Quad: CIRCLE
PWS Id: 00176002
Project: GWAAMON, GWCP01, PWSINV, RADON

Sample Date: 7/25/1995 11:15:00 AM
Agency/Sampler: MBMG / JIL
Field Number: 32476
Lab Date: 10/2/1995
Lab/Analyst: MBMG / TSH
Sample Method/Handling: PUMPED /
Procedure Type: DISSOLVED
Total Depth (ft): 1,508.000
SWL-MP (ft): NR
Depth Water Enters (ft): 1,298.000

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	1.600	0.080	Bicarbonate (HCO3)	886.900	14.536
Magnesium (Mg)	0.374	0.031	Carbonate (CO3)	78.000	4.190
Sodium (Na)	472.200	20.541	Chloride (Cl)	100.000	2.821
Potassium (K)	1.400	0.036	Sulfate (SO4)	<2.5	0.000
Iron (Fe)	0.017	0.001	Nitrate (as N)	<.25 P	0.000
Manganese (Mn)	<.002	0.000	Fluoride (F)	5.100	0.268
Silica (SiO2)	13.600		Orthophosphate (OPO4)	< 1	0.000
Total Cations		20.813	**Total Anions**		21.816

Trace Element Results (µg/L)

Aluminum (Al):	<30	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<2.	Chromium (Cr):	<2	Molybdenum (Mo):	<10	Titanium (Ti):	<10.
Arsenic (As):	1.200	Cobalt (Co):	<2.	Nickel (Ni):	<2	Thallium (Tl):	NR
Barium (Ba):	68.200	Copper (Cu):	5.200	Silver (Ag):	<1.	Uranium (U):	NR
Beryllium (Be):	<2.	Lead (Pb):	<2.	Selenium (Se):	5.700	Vanadium (V):	<5
Boron (B):	1,333.000	Lithium (Li):	52.000	Strontium (Sr):	63.000	Zinc (Zn):	<2
Bromide (Br):	800.000					Zirconium (Zr):	<20

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,109.190	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,559.200	Hardness as CaCO3:	5.530	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,714.000	Field Alkalinity as CaCO3:	775.000	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,710.000	Akalinity as CaCO3:	857.510	Phosphate, TD (mg/L as P):	NR
Field pH:	8.640	Ryznar Stability Index:	8.145	Field Nitrate (mg/L):	NR
Lab pH:	8.580	Sodium Adsorption Ratio:	87.340	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	21.800	Langlier Saturation Index:	0.217	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	-218.800

Additional Parameters

Alkalinity Fld (CaCO3)	775.000	Phosphate T Dis (mg/L - P)	L 2	Redox Potential (Mv)	-218.800

Notes

Sample Condition: CLEAR; BUBBLY
Field Remarks: WELL PUMPING SINCE 6:30 A.M.
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1996Q0121	32476	7/25/1995 11:15:00 AM	CITY OF CIRCLE	19N 48E 10 DACA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	1.600 mg/L	---	---	---
Magnesium (Mg)	0.374 mg/L	---	2,000 mg/L	---
Sodium (Na)	472.200 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.400 mg/L	---	---	---
Iron (Fe)	0.017 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.002 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	13.600 mg/L	---	---	---
Bicarbonate (HCO3)	886.900 mg/L	---	---	---
Carbonate (CO3)	78.000 mg/L	---	---	---
Chloride (Cl)	100.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	<2.5 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<.25 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	5.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	<.1 mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<2. ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	1.200 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	68.200 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,333.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2. ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	5.200 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<2. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	52.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<10. ug/L	---	---	5 ug/L
Nickel (Ni)	<2. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	5.700 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<1. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	63.000 ug/L	---	---	---
Titanium (Ti)	<10. ug/L	---	---	---
Vanadium (V)	<5. ug/L	---	---	---
Zinc (Zn)	<2. ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<20. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

MBP 9

Prairie Elk

Ground-Water Information Center
Site Name: PRAIRIE ELK SCHOOL * 16 MI SW VIDA MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2537 / 2900	**Sample Date:**	9/24/1980 9:20:00 AM
Location (TRS):	23N 45E 24 AAAA	**Agency/Sampler:**	USGS / DBH
Latitude/Longitude:	47° 44' 14" N 105° 45' 7" W	**Field Number:**	1-210
Datum:	NAD27	**Lab Date:**	1/14/1981
Altitude:	2405.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK	**Total Depth (ft):**	200.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	185.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	23.000	1.148	Bicarbonate (HCO3)	2,596.000	42.548
Magnesium (Mg)	14.700	1.210	Carbonate (CO3)	0.000	0.000
Sodium (Na)	1,891.000	82.259	Chloride (Cl)	24.800	0.700
Potassium (K)	4.200	0.107	Sulfate (SO4)	2,055.000	42.806
Iron (Fe)	1.280	0.069	Nitrate (as N)	0.020	0.001
Manganese (Mn)	0.026	0.001	Fluoride (F)	0.950	0.050
Silica (SiO2)	9.400		Orthophosphate (OPO4)	NR	0.000
Total Cations		84.907	**Total Anions**		86.105

Trace Element Results (µg/L)

Aluminum (Al):	<30.	Cadmium (Cd):	<2.	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	<20	Titanium (Ti):	<1.
Arsenic (As):	0.500	Cobalt (Co):	NR	Nickel (Ni):	<10	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	<2	Silver (Ag):	<2	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	<.1	Vanadium (V):	<1.
Boron (B):	890.000	Lithium (Li):	180.000	Strontium (Sr):	1,380.000	Zinc (Zn):	7.000
Bromide (Br):	NR					Zirconium (Zr):	<4

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	5,303.200	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	6,620.380	Hardness as CaCO3:	117.940	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	7,250.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	7,113.000	Akalinity as CaCO3:	2,129.160	Phosphate, TD (mg/L as P):	NR
Field pH:	7.900	Ryznar Stability Index:	5.330	Field Nitrate (mg/L):	NR
Lab pH:	8.290	Sodium Adsorption Ratio:	75.770	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	1.480	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters
Sulfide Total(mg/L-S) L.1

Notes
Sample Condition:
Field Remarks: SAMPLED FROM HOSE BIB * OWNER: PRAIRIE ELK SCHOOL - BOX 4061 - WOLF POINT MT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2537	2900	9/24/1980 9:20:00 AM	PRAIRIE ELK SCHOOL * 16 MI SW VIDA MT	23N 45E 24 AAAA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	23.000 mg/L	---	---	---
Magnesium (Mg)	14.700 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,891.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	4.200 mg/L	---	---	---
Iron (Fe)	1.280 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.026 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.400 mg/L	---	---	---
Bicarbonate (HCO3)	2,596.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	24.800 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	2,055.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.020 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.950 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	0.500 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	890.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2. ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	180.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<20. ug/L	---	---	5 ug/L
Nickel (Ni)	<10. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	1,380.000 ug/L	---	---	---
Titanium (Ti)	<1. ug/L	---	---	---
Vanadium (V)	<1. ug/L	---	---	---
Zinc (Zn)	7.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<4. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: DREYER RAY * 5 M S WELDON MT

MRP 7

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1284 / 2618	**Sample Date:**	8/18/1975 2:55:00 PM
Location (TRS):	21N 45E 34 BBDA	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 32' 24" N 105° 56' 8" W	**Field Number:**	MC-34
Datum:	NAD27	**Lab Date:**	10/17/1975
Altitude:	2520.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125LEBO, 125TGRV	**Total Depth (ft):**	189 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	24 100	1.203	Bicarbonate (HCO3)	824.200	13.509
Magnesium (Mg)	16 700	1.374	Carbonate (CO3)	0 000	0.000
Sodium (Na)	820 000	35.670	Chloride (Cl)	15.800	0.446
Potassium (K)	4 600	0.118	Sulfate (SO4)	1,229 000	25.600
Iron (Fe)	<.01	0 000	Nitrate (as N)	12 700	0 907
Manganese (Mn)	0.010	0 000	Fluoride (F)	0 800	0 042
Silica (SiO2)	7.700		Orthophosphate (OPO4)	NR	0 000
Total Cations		38.365	**Total Anions**		40.503

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,537 420	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,955.610	Hardness as CaCO3:	128 910	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,600.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,591.000	Akalinity as CaCO3:	675.980	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	7.656	Field Nitrate (mg/L):	NR
Lab pH:	6 820	Sodium Adsorption Ratio:	31 420	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	-0.418	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition:
Field Remarks: SHALLOW GW 048 * WELL IN BASEMENT OF DREYER HOUSE * CLEAR WATER SAMPLE COLLECTION FROM KITCHEN SINK *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1284	2618	8/18/1975 2:55:00 PM	DREYER RAY * 5 M S WELDON MT	21N 45E 34 BBDA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	24.100 mg/L	---	---	---
Magnesium (Mg)	16.700 mg/L	---	2,000 mg/L	---
Sodium (Na)	820.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	4.600 mg/L	---	---	---
Iron (Fe)	<.01 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.010 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.700 mg/L	---	---	---
Bicarbonate (HCO3)	824.200 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	15.800 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,229.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	12.700 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.800 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

MAP 10

Ground-Water Information Center

Site Name: WHITMUS FRANK * 5 MI SW VIDA MT

Water Quality Report

Report Date: 3/21/2005

Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2521 / 3001	**Sample Date:**	9/28/1980 9:15:00 AM
Location (TRS):	24N 47E 35 BBBA	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 48' 15" N 105° 39' 32" W	**Field Number:**	1-122
Datum:	NAD27	**Lab Date:**	12/9/1980
Altitude:	2305.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125LEBO	**Total Depth (ft):**	101.000
USGS 7.5' Quad:	DAILEY SPRING 7 1/2	**SWL-MP (ft):**	20 800
PWS Id:		**Depth Water Enters (ft):**	91.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	44 100	2 201	Bicarbonate (HCO3)	1,110 000	18 193
Magnesium (Mg)	24 100	1.983	Carbonate (CO3)	0.000	0 000
Sodium (Na)	975 000	42 413	Chloride (Cl)	12.000	0.339
Potassium (K)	3.000	0 077	Sulfate (SO4)	1,350 000	28.121
Iron (Fe)	< .002	0.000	Nitrate (as N)	0 250	0.018
Manganese (Mn)	0 100	0.004	Fluoride (F)	1 180	0.062
Silica (SiO2)	8.400		Orthophosphate (OPO4)	NR	0 000
Total Cations		46.735	**Total Anions**		46.732

Trace Element Results (µg/L)

Aluminum (Al):	<30.	Cadmium (Cd):	<2.	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	<20.	Titanium (Ti):	<1.
Arsenic (As):	<.1	Cobalt (Co):	NR	Nickel (Ni):	<10.	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	<2	Silver (Ag):	<2	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	<.1	Vanadium (V):	<1.
Boron (B):	420 000	Lithium (Li):	82 000	Strontium (Sr):	850 000	Zinc (Zn):	16 000
Bromide (Br):	NR					Zirconium (Zr):	<4

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,964 940	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,528.150	Hardness as CaCO3:	209 310	T.P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	4,350 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	4,184.800	Akalinity as CaCO3:	910 390	Phosphate, TD (mg/L as P):	NR
Field pH:	7 900	Ryznar Stability Index:	5 733	Field Nitrate (mg/L):	NR
Lab pH:	8.060	Sodium Adsorption Ratio:	29 320	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	NR	Langlier Saturation Index:	1 164	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Sulfide Total(mg/L-S) L 1

Notes

Sample Condition:

Field Remarks: SAMPLED FROM HYDRANT * OWNER: FRANK WHITMUS - BOX 4096 - WOLF POINT MT *

Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2521	3001	9/28/1980 9:15:00 AM	WHITMUS FRANK * 5 MI SW VIDA MT	24N 47E 35 BBBA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	44.100 mg/L	---	---	---
Magnesium (Mg)	24.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	975.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.000 mg/L	---	---	---
Iron (Fe)	<.002 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.100 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.400 mg/L	---	---	---
Bicarbonate (HCO3)	1,110.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	12.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,350.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.250 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.180 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<.1 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	420.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2. ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	82.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<20. ug/L	---	---	5 ug/L
Nickel (Ni)	<10. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	850.000 ug/L	---	---	---
Titanium (Ti)	<1. ug/L	---	---	---
Vanadium (V)	<1. ug/L	---	---	---
Zinc (Zn)	16.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<4. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: WHITMUS FRANK 5 MI SW VIDA

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1985Q1191 / 3002	**Sample Date:**	10/20/1985 10:30:00 AM
Location (TRS):	24N 47E 35 BBBC	**Agency/Sampler:**	USGS / TER
Latitude/Longitude:	47° 48' 12" N 105° 39' 33" W	**Field Number:**	F-1
Datum:	NAD27	**Lab Date:**	12/13/1985
Altitude:	2320.00	**Lab/Analyst:**	MBMG / WO
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 3120
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	640.000
USGS 7.5' Quad:	DAILEY SPRING 7 1/2	**SWL-MP (ft):**	196.010
PWS Id:		**Depth Water Enters (ft):**	580.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	1.900	0.095	Bicarbonate (HCO3)	1,085.000	17.783
Magnesium (Mg)	0.500	0.041	Carbonate (CO3)	0.000	0.000
Sodium (Na)	476.000	20.706	Chloride (Cl)	93.900	2.649
Potassium (K)	0.500	0.013	Sulfate (SO4)	3.400	0.071
Iron (Fe)	0.064	0.003	Nitrate (as N)	0.100	0.007
Manganese (Mn)	0.001	0.000	Fluoride (F)	5.500	0.290
Silica (SiO2)	13.400		Orthophosphate (OPO4)	0.100	0.003
Total Cations		21.013	**Total Anions**		20.803

Trace Element Results (µg/L)

Aluminum (Al):	<30.	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	<20.	Titanium (Ti):	<1.
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	<10.	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	<2.	Silver (Ag):	<2.	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	<1.
Boron (B):	1,650.000	Lithium (Li):	47.000	Strontium (Sr):	73.000	Zinc (Zn):	4.000
Bromide (Br):	100.000					Zirconium (Zr):	<4.

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,129.850	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,680.370	Hardness as CaCO3:	6.800	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,870.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,916.100	Akalinity as CaCO3:	889.890	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	8.284	Field Nitrate (mg/L):	NR
Lab pH:	8.260	Sodium Adsorption Ratio:	79.430	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	13.000	Langlier Saturation Index:	-0.012	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Phosphate T Dis (mg/L - P) 0.100

Notes

Sample Condition: CLEAR
Field Remarks: WELL PUMPED FOR 10 MINUTES BEFORE SAMPLING AT 10 GPM SEND ANALYSIS TO: F WHITMUS BOX 4096 WOLF POINT MT
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1985Q1191	3002	10/20/1985 10:30:00 AM	WHITMUS FRANK 5 MI SW VIDA	24N 47E 35 BBBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	1.900 mg/L	---	---	---
Magnesium (Mg)	0.500 mg/L	---	2,000 mg/L	---
Sodium (Na)	476.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	0.500 mg/L	---	---	---
Iron (Fe)	0.064 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.001 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	13.400 mg/L	---	---	---
Bicarbonate (HCO3)	1,085.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	93.900 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	3.400 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.100 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	5.500 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	0.100 mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,650.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2. ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	47.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<20. ug/L	---	---	5 ug/L
Nickel (Ni)	<10. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	73.000 ug/L	---	---	---
Titanium (Ti)	<1. ug/L	---	---	---
Vanadium (V)	<1. ug/L	---	---	---
Zinc (Zn)	4.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<4. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: WHITMUS FRANK 5 MI SW VIDA

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2000Q1097 / 3002	**Sample Date:**	5/8/2000 12:39:00 PM
Location (TRS):	24N 47E 35 BBBC	**Agency/Sampler:**	MBMG / MGR
Latitude/Longitude:	47° 48' 12" N 105° 39' 33" W	**Field Number:**	3002
Datum:	NAD27	**Lab Date:**	8/23/2000
Altitude:	2320.00	**Lab/Analyst:**	MBMG / JMC
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 6220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	640.000
USGS 7.5' Quad:	DAILEY SPRING 7 1/2	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	580.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	2.490	0.124	Bicarbonate (HCO3)	1,088.200	17.836
Magnesium (Mg)	0.548	0.045	Carbonate (CO3)	0.000	0.000
Sodium (Na)	473.000	20.576	Chloride (Cl)	92.300	2.604
Potassium (K)	1.520	0.039	Sulfate (SO4)	<25.0	0.000
Iron (Fe)	<.05	0.000	Nitrate (as N)	<.5 P	0.000
Manganese (Mn)	<.01	0.000	Fluoride (F)	5.960	0.314
Silica (SiO2)	11.900		Orthophosphate (OPO4)	<.5	0.000
Total Cations		20.941	**Total Anions**		20.753

Trace Element Results (µg/L)

Aluminum (Al):	<30	Cadmium (Cd):	887.000	Mercury (Hg):	6.030	Tin (Sn):	5.160
Antimony (Sb):	<2	Chromium (Cr):	<2	Molybdenum (Mo):	66.000	Titanium (Ti):	81.000
Arsenic (As):	1.670	Cobalt (Co):	<2	Nickel (Ni):	<10	Thallium (Tl):	<100
Barium (Ba):	99.500	Copper (Cu):	<2	Silver (Ag):	<1	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<2	Selenium (Se):	<2	Vanadium (V):	<5
Boron (B):	1,700.000	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	<5
Bromide (Br):	887.000					Zirconium (Zr):	2.010

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,123.780	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,675.920	Hardness as CaCO3:	8.470	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,925.000	Field Alkalinity as CaCO3:	908.000	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,911.000	Akalinity as CaCO3:	892.510	Phosphate, TD (mg/L as P):	<1.0
Field pH:	8.610	Ryznar Stability Index:	7.826	Field Nitrate (mg/L):	0.000
Lab pH:	8.480	Sodium Adsorption Ratio:	70.730	Field Dissolved O2 (mg/L):	0.210
Water Temp (°C):	14.400	Langlier Saturation Index:	0.327	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: CLEAR
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2000Q1097	3002	5/8/2000 12:39:00 PM	WHITMUS FRANK 5 MI SW VIDA	24N 47E 35 BBBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	2.490 mg/L	---	---	---
Magnesium (Mg)	0.548 mg/L	---	2,000 mg/L	---
Sodium (Na)	473.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.520 mg/L	---	---	---
Iron (Fe)	<.05 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	11.900 mg/L	---	---	---
Bicarbonate (HCO3)	1,088.200 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	92.300 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	<25.0 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<.5 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	5.960 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	<.5 mg/L	---	---	---
Aluminum (Al)	<30 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<2 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	1.670 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	99.500 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,700.000 ug/L	---	---	---
Cadmium (Cd)	887.000 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<2 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	66.000 ug/L	---	---	5 ug/L
Nickel (Ni)	<10 ug/L	---	---	200 ug/L
Phosphate (P)	<1.0 ug/L	---	---	---
Selenium (Se)	<2 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<1 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	81.000 ug/L	---	---	---
Vanadium (V)	<5 ug/L	---	---	---
Zinc (Zn)	<5 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	2.010 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: WHITMUS FRANK 5 MI SW VIDA

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2003Q1208 / 3002	**Sample Date:**	6/27/2003 8:45:00 AM
Location (TRS):	24N 47E 35 BBBC	**Agency/Sampler:**	MBMG / CWS
Latitude/Longitude:	47° 48' 12" N 105° 39' 33" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	8/27/2003
Altitude:	2320.00	**Lab/Analyst:**	MBMG / KTH
County/State:	MCCONE / MT	**Sample Method/Handling:**	/ 4230
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	640.000
USGS 7.5' Quad:	DAILEY SPRING 7 1/2	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	580.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	2.000	0.100	Bicarbonate (HCO3)	1,003.500	16.447
Magnesium (Mg)	0.600	0.049	Carbonate (CO3)	39.600	2.127
Sodium (Na)	456.000	19.836	Chloride (Cl)	90.700	2.559
Potassium (K)	1.150	0.029	Sulfate (SO4)	<2.5	0.000
Iron (Fe)	0.020	0.001	Nitrate (as N)	<0.5 P	0.000
Manganese (Mn)	0.001	0.000	Fluoride (F)	6.670	0.351
Silica (SiO2)	10.200		Orthophosphate (OPO4)	0.060	0.002
Total Cations		20.164	**Total Anions**		21.486

Trace Element Results (µg/L)

Aluminum (Al):	<30	Cadmium (Cd):	<1	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<10	Chromium (Cr):	<10	Molybdenum (Mo):	<10	Titanium (Ti):	<1
Arsenic (As):	<5	Cobalt (Co):	<2	Nickel (Ni):	<2	Thallium (Tl):	<25
Barium (Ba):	97.800	Copper (Cu):	<5	Silver (Ag):	<5	Uranium (U):	<2.5
Beryllium (Be):	<2	Lead (Pb):	<10	Selenium (Se):	<5	Vanadium (V):	<10
Boron (B):	1,584.000	Lithium (Li):	59.600	Strontium (Sr):	90.500	Zinc (Zn):	<2
Bromide (Br):	658.000					Zirconium (Zr):	<2

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,101.340	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,610.500	Hardness as CaCO3:	7.460	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,780.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,810.000	Akalinity as CaCO3:	889.090	Phosphate, TD (mg/L as P):	<0.05
Field pH:	8.800	Ryznar Stability Index:	7.970	Field Nitrate (mg/L):	0.000
Lab pH:	8.530	Sodium Adsorption Ratio:	72.650	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	14.200	Langlier Saturation Index:	0.280	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: CLEAR/GAS BUBBLES
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2003Q1208	3002	6/27/2003 8:45:00 AM	WHITMUS FRANK 5 MI SW VIDA	24N 47E 35 BBBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	2.000 mg/L	---	---	---
Magnesium (Mg)	0.600 mg/L	---	2,000 mg/L	---
Sodium (Na)	456.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.150 mg/L	---	---	---
Iron (Fe)	0.020 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.001 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	10.200 mg/L	---	---	---
Bicarbonate (HCO3)	1,003.500 mg/L	---	---	---
Carbonate (CO3)	39.600 mg/L	---	---	---
Chloride (Cl)	90.700 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	<2.5 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	<0.5 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	6.670 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	0.060 mg/L	---	---	---
Aluminum (Al)	<30 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<10 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<5 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	97.800 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,584.000 ug/L	---	---	---
Cadmium (Cd)	<1 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<10 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<5 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<10 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	59.600 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<10 ug/L	---	---	5 ug/L
Nickel (Ni)	<2 ug/L	---	---	200 ug/L
Phosphate (P)	<0.05 ug/L	---	---	---
Selenium (Se)	<5 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<5 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	90.500 ug/L	---	---	---
Titanium (Ti)	<1 ug/L	---	---	---
Vanadium (V)	<10 ug/L	---	---	---
Zinc (Zn)	<2 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<2 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc) and is not a health standard

Ground-Water Information Center
Site Name: WHITMUS FRANK * 5 MI SW VIDA MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	2005Q0087 / 3001	**Sample Date:**	8/11/2004 10:00:00 AM
Location (TRS):	24N 47E 35 BBBA	**Agency/Sampler:**	MBMG / CWS
Latitude/Longitude:	47° 48' 15" N 105° 39' 32" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	9/13/2004
Altitude:	2305.00	**Lab/Analyst:**	MBMG / WO
County/State:	MCCONE / MT	**Sample Method/Handling:**	BAILED / 4230
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125LEBO	**Total Depth (ft):**	101.000
USGS 7.5' Quad:	DAILEY SPRING 7 1/2	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	91.000
Project:	GWAAMON		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	2.880	0.144	Bicarbonate (HCO3)	1,043.100	17.096
Magnesium (Mg)	1.650	0.136	Carbonate (CO3)	0.000	0.000
Sodium (Na)	426.000	18.531	Chloride (Cl)	81.700	2.305
Potassium (K)	6.510	0.167	Sulfate (SO4)	7.400	0.154
Iron (Fe)	0.634	0.034	Nitrate (as N)	1.90 P	0.000
Manganese (Mn)	0.009	0.000	Fluoride (F)	0.064	0.003
Silica (SiO2)	5.620		Orthophosphate (OPO4)	0.991	0.031
Total Cations		19.138	**Total Anions**		19.590

Trace Element Results (µg/L)

Aluminum (Al):	<30	Cadmium (Cd):	<1	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	<10	Chromium (Cr):	13.200	Molybdenum (Mo):	12.100	Titanium (Ti):	<1
Arsenic (As):	<5	Cobalt (Co):	<2	Nickel (Ni):	<2	Thallium (Tl):	<25
Barium (Ba):	16.500	Copper (Cu):	<5	Silver (Ag):	<5	Uranium (U):	<3
Beryllium (Be):	<2	Lead (Pb):	<10	Selenium (Se):	11.800	Vanadium (V):	<10
Boron (B):	1,340.000	Lithium (Li):	46.500	Strontium (Sr):	98.900	Zinc (Zn):	13.100
Bromide (Br):	895.000					Zirconium (Zr):	<2

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,049.210	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,578.470	Hardness as CaCO3:	13.980	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	1,820.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,870.000	Akalinity as CaCO3:	855.520	Phosphate, TD (mg/L as P):	0.792
Field pH:	8.730	Ryznar Stability Index:	8.337	Field Nitrate (mg/L):	NR
Lab pH:	7.880	Sodium Adsorption Ratio:	49.570	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.300	Langlier Saturation Index:	-0.228	Field Chloride (mg/L):	NR
Air Temp (°C):	25.000	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: DIRTY. 3/4 INCH BAILER USED. BAILED BY HAND
Field Remarks: BAILED ONLY ENOUGH TO SAMPLE.
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
2005Q0087	3001	8/11/2004 10:00:00 AM	WHITMUS FRANK * 5 MI SW VIDA MT	24N 47E 35 BBBA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	2.880 mg/L	---	---	---
Magnesium (Mg)	1.650 mg/L	---	2,000 mg/L	---
Sodium (Na)	426.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	6.510 mg/L	---	---	---
Iron (Fe)	0.634 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.009 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	5.620 mg/L	---	---	---
Bicarbonate (HCO3)	1,043.100 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	81.700 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	7.400 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	1.90 P mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.064 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	0.991 mg/L	---	---	---
Aluminum (Al)	<30 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	<10 ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<5 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	16.500 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,340.000 ug/L	---	---	---
Cadmium (Cd)	<1 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	13.200 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	<2 ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<5 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<10 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	46.500 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	12.100 ug/L	---	---	5 ug/L
Nickel (Ni)	<2 ug/L	---	---	200 ug/L
Phosphate (P)	0.792 ug/L	---	---	---
Selenium (Se)	11.800 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<5 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	98.900 ug/L	---	---	---
Titanium (Ti)	<1 ug/L	---	---	---
Vanadium (V)	<10 ug/L	---	---	---
Zinc (Zn)	13.100 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<2 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc) and is not a health standard

M 498

Ground-Water Information Center
Site Name: WALLER G. * 5 M S WELDON MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1541 / 2622	**Sample Date:**	9/20/1975 8:55:00 AM
Location (TRS):	21N 46E 29 ACDA	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 33' 7" N 105° 50' 21" W	**Field Number:**	MC-42
Datum:	NAD27	**Lab Date:**	1/6/1976
Altitude:	2655.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125FRUN	**Total Depth (ft):**	240.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	70.200	3.503	Bicarbonate (HCO3)	1,000.400	16.397
Magnesium (Mg)	95.100	7.826	Carbonate (CO3)	0.000	0.000
Sodium (Na)	520.000	22.620	Chloride (Cl)	5.750	0.162
Potassium (K)	9.600	0.246	Sulfate (SO4)	837.700	17.449
Iron (Fe)	0.010	0.001	Nitrate (as N)	2.700	0.193
Manganese (Mn)	0.030	0.001	Fluoride (F)	0.100	0.005
Silica (SiO2)	10.700		Orthophosphate (OPO4)	NR	0.000
Total Cations		34.196	**Total Anions**		34.206

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,044.700	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,552.290	Hardness as CaCO3:	566.720	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,850.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,980.000	Akalinity as CaCO3:	820.500	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.699	Field Nitrate (mg/L):	NR
Lab pH:	7.780	Sodium Adsorption Ratio:	9.500	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	12.000	Langlier Saturation Index:	1.040	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition:
Field Remarks: SHALLOW GW 048 * WELL 20 FEET FROM WALLER HOUSE *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U S Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1541	2622	9/20/1975 8:55:00 AM	WALLER G. * 5 M S WELDON MT	21N 46E 29 ACDA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	70.200 mg/L	---	---	---
Magnesium (Mg)	95.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	520.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	9.600 mg/L	---	---	---
Iron (Fe)	0.010 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.030 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	10.700 mg/L	---	---	---
Bicarbonate (HCO3)	1,000.400 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	5.750 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	837.700 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	2.700 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

MPP8

Ground-Water Information Center
Site Name: MERRY HERSCHEL * 13 M N CIRCLE MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1540 / 2623	**Sample Date:**	9/19/1975 9:55:00 AM
Location (TRS):	21N 48E 12 BBCB	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 35' 55" N 105° 30' 37" W	**Field Number:**	MC-41
Datum:	NAD27	**Lab Date:**	1/7/1976
Altitude:	2500.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TGRV	**Total Depth (ft):**	260 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	6.200	0.309	Bicarbonate (HCO3)	683.200	11 198
Magnesium (Mg)	3.100	0.255	Carbonate (CO3)	0.000	0.000
Sodium (Na)	700.000	30 450	Chloride (Cl)	21.650	0 611
Potassium (K)	2.400	0.061	Sulfate (SO4)	887.800	18 493
Iron (Fe)	<.01	0.000	Nitrate (as N)	1.000	0 071
Manganese (Mn)	< 01	0.000	Fluoride (F)	2.700	0 142
Silica (SiO2)	6.000		Orthophosphate (OPO4)	NR	0.000
Total Cations		31.076	**Total Anions**		30 515

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,967.400	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,314.050	Hardness as CaCO3:	28.240	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,900.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,975.000	Akalinity as CaCO3:	560.340	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	7.648	Field Nitrate (mg/L):	NR
Lab pH:	8 270	Sodium Adsorption Ratio:	57 320	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	12.000	Langlier Saturation Index:	0.311	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes
Sample Condition:
Field Remarks: SHALLOW GW 048 * WELL 10 FEET FROM HOUSE *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC
Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1540	2623	9/19/1975 9:55:00 AM	MERRY HERSCHEL * 13 M N CIRCLE MT	21N 48E 12 BBCB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	6.200 mg/L	---	---	---
Magnesium (Mg)	3.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	700.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.400 mg/L	---	---	---
Iron (Fe)	<.01 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	6.000 mg/L	---	---	---
Bicarbonate (HCO3)	683.200 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	21.650 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	887.800 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	1.000 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.700 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: KJELGAARD HAROLD *

M AP 13

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2527 / 3056	**Sample Date:**	9/1/1980 9:20:00 AM
Location (TRS):	25N 46E 29 CBAA	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 53' 24" N 105° 48' 53" W	**Field Number:**	1-128
Datum:	NAD27	**Lab Date:**	2/2/1981
Altitude:	2318.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211HLCK	**Total Depth (ft):**	220.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	200 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	18 400	0.918	Bicarbonate (HCO3)	1,964 000	32 190
Magnesium (Mg)	7 500	0.617	Carbonate (CO3)	0 000	0 000
Sodium (Na)	1,340.000	58 290	Chloride (Cl)	5 700	0 161
Potassium (K)	2.600	0 067	Sulfate (SO4)	1,345 000	28 016
Iron (Fe)	0 081	0.004	Nitrate (as N)	0.580	0 041
Manganese (Mn)	0 064	0.002	Fluoride (F)	1.900	0 100
Silica (SiO2)	11 800		Orthophosphate (OPO4)	NR	0 000
Total Cations		60 050	**Total Anions**		60.509

Trace Element Results (µg/L)

Aluminum (Al):	<30.	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	<20	Titanium (Ti):	<1.
Arsenic (As):	0 100	Cobalt (Co):	NR	Nickel (Ni):	<10.	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	<2	Silver (Ag):	<2.	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	0 200	Vanadium (V):	<1.
Boron (B):	1,480.000	Lithium (Li):	200.000	Strontium (Sr):	590.000	Zinc (Zn):	52 000
Bromide (Br):	NR					Zirconium (Zr):	<4

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	3,701 160	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	4,697 680	Hardness as CaCO3:	76.810	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	5,500 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	5,183 000	Akalinity as CaCO3:	1,610 820	Phosphate, TD (mg/L as P):	NR
Field pH:	7 900	Ryznar Stability Index:	6 056	Field Nitrate (mg/L):	NR
Lab pH:	8 000	Sodium Adsorption Ratio:	66 530	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	9 500	Langlier Saturation Index:	0 972	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters
Sulfide Total(mg/L-S) L.1

Notes
Sample Condition: SAMPLED FROM DISCHARGE HOSE *
Field Remarks: OWNER: HAROLD KJELGAARD - STAR ROUTE 232 - BOX C43 - WOLF POINT MT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2527	3056	9/1/1980 9:20:00 AM	KJELGAARD HAROLD *	25N 46E 29 CBAA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	18.400 mg/L	---	---	---
Magnesium (Mg)	7.500 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,340.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.600 mg/L	---	---	---
Iron (Fe)	0.081 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.064 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	11.800 mg/L	---	---	---
Bicarbonate (HCO3)	1,964.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	5.700 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,345.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.580 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.900 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	0.100 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,480.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2. ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	200.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<20. ug/L	---	---	5 ug/L
Nickel (Ni)	<10. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.200 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	590.000 ug/L	---	---	---
Titanium (Ti)	<1. ug/L	---	---	---
Vanadium (V)	<1. ug/L	---	---	---
Zinc (Zn)	52.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<4. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: FLATTEN CLINTON * 14 MI SW VIDA MT

MAR 10

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2522 / 2999	**Sample Date:**	9/29/1980 10:45:00 AM
Location (TRS):	24N 46E 17 CDBD	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 50' 6" N 105° 50' 51" W	**Field Number:**	1-123
Datum:	NAD27	**Lab Date:**	12/9/1980
Altitude:	2245.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	175.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	130.000
Project:			

ef 4/6

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	13.200	0.659	Bicarbonate (HCO3)	1,160.000	19.012
Magnesium (Mg)	7.800	0.642	Carbonate (CO3)	0.000	0.000
Sodium (Na)	736.000	32.016	Chloride (Cl)	27.900	0.787
Potassium (K)	1.900	0.049	Sulfate (SO4)	660.000	13.748
Iron (Fe)	0.015	0.001	Nitrate (as N)	0.140	0.010
Manganese (Mn)	0.007	0.000	Fluoride (F)	4.070	0.214
Silica (SiO2)	11.000		Orthophosphate (OPO4)	NR	0.000
Total Cations		33.485	**Total Anions**		33.771

Trace Element Results (µg/L)

Aluminum (Al):	<30.	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	<20.	Titanium (Ti):	<1.
Arsenic (As):	0.400	Cobalt (Co):	NR	Nickel (Ni):	<10.	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	<2	Silver (Ag):	<2.	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<10.	Selenium (Se):	<.1	Vanadium (V):	<1.
Boron (B):	1,150.000	Lithium (Li):	99.000	Strontium (Sr):	210.000	Zinc (Zn):	250.000
Bromide (Br):	NR					Zirconium (Zr):	<4

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,033.710	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,622.280	Hardness as CaCO3:	65.070	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,050.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,993.800	Akalinity as CaCO3:	951.400	Phosphate, TD (mg/L as P):	NR
Field pH:	7.800	Ryznar Stability Index:	6.732	Field Nitrate (mg/L):	NR
Lab pH:	8.070	Sodium Adsorption Ratio:	39.710	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0.669	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters
Sulfide Total(mg/L-S) L 1

Notes
Sample Condition:
Field Remarks: SAMPLED FROM DISCHARGE PIPE * OWNER: CLINTON FLATTEN - STAR ROUTE - WOLF POINT MT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2522	2999	9/29/1980 10:45:00 AM	FLATTEN CLINTON * 14 MI SW VIDA MT	24N 46E 17 CDBD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	13.200 mg/L	---	---	---
Magnesium (Mg)	7.800 mg/L	---	2,000 mg/L	---
Sodium (Na)	736.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.900 mg/L	---	---	---
Iron (Fe)	0.015 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.007 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	11.000 mg/L	---	---	---
Bicarbonate (HCO3)	1,160.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	27.900 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	660.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.140 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	4.070 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	0.400 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,150.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2. ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<10. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	99.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<20. ug/L	---	---	5 ug/L
Nickel (Ni)	<10. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	210.000 ug/L	---	---	---
Titanium (Ti)	<1. ug/L	---	---	---
Vanadium (V)	<1. ug/L	---	---	---
Zinc (Zn)	250.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<4. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc) and is not a health standard

Ground-Water Information Center
Site Name: WAGNER R * 8 M W CIRCLE

MAP #5

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1192 / 2370	**Sample Date:**	7/29/1975 9:30:00 AM
Location (TRS):	19N 47E 08 CCDC	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 24' 47" N 105° 45' 48" W	**Field Number:**	MC-29
Datum:	NAD27	**Lab Date:**	10/9/1975
Altitude:	2680.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125TGRV	**Total Depth (ft):**	85.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	183 400	9 152	Bicarbonate (HCO3)	494 800	8.110
Magnesium (Mg)	138 900	11 430	Carbonate (CO3)	0 000	0.000
Sodium (Na)	92.000	4 002	Chloride (Cl)	44.650	1.260
Potassium (K)	3.800	0 097	Sulfate (SO4)	667.200	13.898
Iron (Fe)	0 010	0 001	Nitrate (as N)	20.300	1.449
Manganese (Mn)	<.01	0 000	Fluoride (F)	0.100	0.005
Silica (SiO2)	11 000		Orthophosphate (OPO4)	NR	0 000
Total Cations		24.681	**Total Anions**		24 722

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,405 100	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,656 160	Hardness as CaCO3:	1,029 660	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,980 000	Akalinity as CaCO3:	405.820	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5 897	Field Nitrate (mg/L):	NR
Lab pH:	7.360	Sodium Adsorption Ratio:	1.250	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0 732	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes
Sample Condition:
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1192	2370	7/29/1975 9:30:00 AM	WAGNER R. * 8 M W CIRCLE	19N 47E 08 CCDC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	183.400 mg/L	---	---	---
Magnesium (Mg)	138.900 mg/L	---	2,000 mg/L	---
Sodium (Na)	92.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.800 mg/L	---	---	---
Iron (Fe)	0.010 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	11.000 mg/L	---	---	---
Bicarbonate (HCO3)	494.800 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	44.650 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	667.200 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	20.300 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: ZAHN DONALD * 7 M W CIRCLE MT

MAP5

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1188 / 2372	**Sample Date:**	7/28/1975 11:30:00 AM
Location (TRS):	19N 47E 10 ACDC	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 25' 14" N 105° 42' 35" W	**Field Number:**	MC-25
Datum:	NAD27	**Lab Date:**	10/10/1975
Altitude:	2600.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	110ALVM	**Total Depth (ft):**	20.200
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	237.100	11.831	Bicarbonate (HCO3)	378.600	6.205
Magnesium (Mg)	248.200	20.424	Carbonate (CO3)	0.000	0.000
Sodium (Na)	230.000	10.005	Chloride (Cl)	3.650	0.103
Potassium (K)	2.700	0.069	Sulfate (SO4)	1,705.700	35.530
Iron (Fe)	0.020	0.001	Nitrate (as N)	7.000	0.500
Manganese (Mn)	< 01	0.000	Fluoride (F)	0.200	0.011
Silica (SiO2)	9.900		Orthophosphate (OPO4)	NR	0.000
Total Cations		42.331	**Total Anions**		42.348

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,630.970	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,823.070	Hardness as CaCO3:	1,613.630	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,198.000	Akalinity as CaCO3:	310.520	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	6.546	Field Nitrate (mg/L):	NR
Lab pH:	6.620	Sodium Adsorption Ratio:	2.490	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	8.000	Langlier Saturation Index:	0.037	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: * SHALLOW GW 048 * WELL 75 FEET EAST OF HOUSE *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1188	2372	7/28/1975 11:30:00 AM	ZAHN DONALD * 7 M W CIRCLE MT	19N 47E 10 ACDC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	237.100 mg/L	---	---	---
Magnesium (Mg)	248.200 mg/L	---	2,000 mg/L	---
Sodium (Na)	230.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.700 mg/L	---	---	---
Iron (Fe)	0.020 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.900 mg/L	---	---	---
Bicarbonate (HCO3)	378.600 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	3.650 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,705.700 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	7.000 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.200 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e odor, color, etc.) and is not a health standard.

Ground-Water Information Center
Site Name: ZAHN DONALD * 4.5 M W CIRCLE MT

MP 5

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1185 / 2375	**Sample Date:**	7/28/1975 1:16:00 PM
Location (TRS):	19N 47E 13 ABBA	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 24' 43" N 105° 40' 8" W	**Field Number:**	MC-22
Datum:	NAD27	**Lab Date:**	10/15/1975
Altitude:	2540.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125TGRV	**Total Depth (ft):**	49.900
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	298.700	14.905	Bicarbonate (HCO3)	784.700	12.861
Magnesium (Mg)	229.700	18.902	Carbonate (CO3)	0.000	0.000
Sodium (Na)	532.500	23.164	Chloride (Cl)	7.950	0.224
Potassium (K)	9.600	0.246	Sulfate (SO4)	2,125.800	44.280
Iron (Fe)	0.040	0.002	Nitrate (as N)	4.300	0.307
Manganese (Mn)	0.700	0.025	Fluoride (F)	0.200	0.011
Silica (SiO2)	8.300		Orthophosphate (OPO4)	NR	0.000
Total Cations		57.244	**Total Anions**		57.683

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	3,604.340	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	4,002.490	Hardness as CaCO3:	1,691.300	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	4,308.000	Akalinity as CaCO3:	643.590	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.502	Field Nitrate (mg/L):	NR
Lab pH:	6.830	Sodium Adsorption Ratio:	5.630	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	9.000	Langlier Saturation Index:	0.664	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: * SHALLOW GW 048 * WELL 100 FEET S OF ROAD
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1185	2375	7/28/1975 1:16:00 PM	ZAHN DONALD * 4.5 M W CIRCLE MT	19N 47E 13 ABBA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	298.700 mg/L	---	---	---
Magnesium (Mg)	229.700 mg/L	---	2,000 mg/L	---
Sodium (Na)	532.500 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	9.600 mg/L	---	---	---
Iron (Fe)	0.040 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.700 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.300 mg/L	---	---	---
Bicarbonate (HCO3)	784.700 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	7.950 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	2,125.800 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	4.300 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.200 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e. odor, color, etc) and is not a health standard

MAP 7

Ground-Water Information Center
Site Name: UNKNOWN * 19.4 MI SW WELDON

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1966Q0027 / 895522	**Sample Date:**	11/1/1966
Location (TRS):	22N 44E 18 BB	**Agency/Sampler:**	/
Latitude/Longitude:	47° 40' 17" N 106° 7' 46" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	
Altitude:		**Lab/Analyst:**	/
County/State:	MCCONE / MT	**Sample Method/Handling:**	DRILL STEM TEST /
Site Type:	PETWELL	**Procedure Type:**	DISSOLVED
Geology:	331CRLS		
USGS 7.5' Quad:	BUG CREEK 7 1/2'		
PWS Id:			
Project:	DEEPAQU		
Sample Water Use:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	370 000	18.463	Bicarbonate (HCO3)	295.000	4 835
Magnesium (Mg)	76.000	6.254	Carbonate (CO3)	37 000	1 988
Sodium (Na)	2300 K	0.000	Chloride (Cl)	1,500 000	42 315
Potassium (K)	NR	0.000	Sulfate (SO4)	3,700 000	77 071
Iron (Fe)	NR	0.000	Nitrate (as N)	NR	0 000
Manganese (Mn)	NR	0 000	Fluoride (F)	NR	0 000
Silica (SiO2)	NR		Orthophosphate (OPO4)	NR	0 000
Total Cations		24.717	**Total Anions**		126 209

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	8,128 320	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	8,278 000	Hardness as CaCO3:	1,236.710	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	NR	Akalinity as CaCO3:	303.660	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	4.099	Field Nitrate (mg/L):	NR
Lab pH:	8.800	Sodium Adsorption Ratio:	28 460	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	NR	Langlier Saturation Index:	2.351	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Diss Solids (rpt mg/L)	8,110.000	Resistivity At 68 F	1 100	Specific Gravity At 60 F	1 010

Notes

Sample Condition:
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1966Q0027	895522	11/1/1966	UNKNOWN * 19.4 MI SW WELDON	22N 44E 18 BB	PETWELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	370.000 mg/L	---	---	---
Magnesium (Mg)	76.000 mg/L	---	2,000 mg/L	---
Sodium (Na)	2300 K mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	NR mg/L	---	---	---
Iron (Fe)	NR mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	NR mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	NR mg/L	---	---	---
Bicarbonate (HCO3)	295.000 mg/L	---	---	---
Carbonate (CO3)	37.000 mg/L	---	---	---
Chloride (Cl)	1,500.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	3,700.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	NR mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	NR mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc) and is not a health standard

Map 1

Ground-Water Information Center
Site Name: PAWLOWSKI W * 14 M S ILLMONT SCHOOL

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1538 / 2752	**Sample Date:**	8/7/1975 11:30:00 AM
Location (TRS):	22N 44E 23 DDBC	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 38' 44" N 106° 1' 54" W	**Field Number:**	MC-32
Datum:	NAD27	**Lab Date:**	1/5/1976
Altitude:	2540.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125LEBO	**Total Depth (ft):**	37.400
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	91.300	4.556	Bicarbonate (HCO3)	448.400	7.349
Magnesium (Mg)	60.000	4.937	Carbonate (CO3)	0.000	0.000
Sodium (Na)	193.000	8.396	Chloride (Cl)	6.950	0.196
Potassium (K)	3.700	0.095	Sulfate (SO4)	522.200	10.877
Iron (Fe)	0.010	0.001	Nitrate (as N)	0.200	0.014
Manganese (Mn)	0.010	0.000	Fluoride (F)	0.400	0.021
Silica (SiO2)	8.900		Orthophosphate (OPO4)	NR	0.000
Total Cations		17.984	**Total Anions**		18.458

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,107.560	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	1,335.070	Hardness as CaCO3:	474.940	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	1,567.000	Akalinity as CaCO3:	367.760	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	6.078	Field Nitrate (mg/L):	NR
Lab pH:	7.870	Sodium Adsorption Ratio:	3.860	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	7.000	Langlier Saturation Index:	0.896	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition:
Field Remarks: SHALLOW GW 048 * WELL NEAR UNUSED HOUSE *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1538	2752	8/7/1975 11:30:00 AM	PAWLOWSKI W. * 14 M S ILLMONT SCHOOL	22N 44E 23 DDBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	**91.300 mg/L**	---	---	---
Magnesium (Mg)	**60.000 mg/L**	---	2,000 mg/L	---
Sodium (Na)	**193.000 mg/L**	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	**3.700 mg/L**	---	---	---
Iron (Fe)	**0.010 mg/L**	0.3 mg/L [smcl]	---	---
Manganese (Mn)	**0.010 mg/L**	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	**8.900 mg/L**	---	---	---
Bicarbonate (HCO3)	**448.400 mg/L**	---	---	---
Carbonate (CO3)	**0.000 mg/L**	---	---	---
Chloride (Cl)	**6.950 mg/L**	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	**522.200 mg/L**	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	**0.200 mg/L**	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	**0.400 mg/L**	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	**NR mg/L**	---	---	---
Aluminum (Al)	**NR ug/L**	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	**NR ug/L**	6 ug/L [mcl]	---	---
Arsenic (As)	**NR ug/L**	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	**NR ug/L**	2,000 ug/L [mcl]	---	---
Boron (B)	**NR ug/L**	---	---	---
Cadmium (Cd)	**NR ug/L**	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	**NR ug/L**	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	**NR ug/L**	---	1,000 ug/L	50 ug/L
Copper (Cu)	**NR ug/L**	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	**NR ug/L**	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	**NR ug/L**	---	---	2,500 ug/L
Molybdenum (Mo)	**NR ug/L**	---	---	5 ug/L
Nickel (Ni)	**NR ug/L**	---	---	200 ug/L
Phosphate (P)	**NR ug/L**	---	---	---
Selenium (Se)	**NR ug/L**	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	**NR ug/L**	100 ug/L [smcl]	---	---
Strontium (Sr)	**NR ug/L**	---	---	---
Titanium (Ti)	**NR ug/L**	---	---	---
Vanadium (V)	**NR ug/L**	---	---	---
Zinc (Zn)	**NR ug/L**	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	**NR ug/L**	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

MAP 14

Ground-Water Information Center
Site Name: SEXTON WALLACE * LOCATION IN REMARKS

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2500 / 3211
Location (TRS):	26N 48E 15 BCCC
Latitude/Longitude:	48° 0' 20" N 105° 30' 55" W
Datum:	NAD27
Altitude:	2225.00
County/State:	MCCONE / MT
Site Type:	WELL
Geology:	125TLCK
USGS 7.5' Quad:	MACON 7 1/2'
PWS Id:	
Project:	
Sample Date:	9/23/1980 4:25:00 PM
Agency/Sampler:	USGS / MET
Field Number:	1-110
Lab Date:	1/14/1981
Lab/Analyst:	MBMG / FNA
Sample Method/Handling:	PUMPED / 4220
Procedure Type:	DISSOLVED
Total Depth (ft):	75.000
SWL-MP (ft):	NR
Depth Water Enters (ft):	NR

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	470.000	23.453	Bicarbonate (HCO3)	493.000	8.080
Magnesium (Mg)	501.000	41.227	Carbonate (CO3)	0.000	0.000
Sodium (Na)	1,015.000	44.153	Chloride (Cl)	57.800	1.631
Potassium (K)	5.000	0.128	Sulfate (SO4)	4,830.000	100.609
Iron (Fe)	0.050	0.003	Nitrate (as N)	6.510	0.465
Manganese (Mn)	0.013	0.000	Fluoride (F)	1.120	0.059
Silica (SiO2)	13.400		Orthophosphate (OPO4)	NR	0.000
Total Cations		109.194	**Total Anions**		110.843

Trace Element Results (µg/L)

Aluminum (Al):	120.000	Cadmium (Cd):	7.000	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	20.000	Molybdenum (Mo):	50.000	Titanium (Ti):	59.000
Arsenic (As):	0.200	Cobalt (Co):	NR	Nickel (Ni):	70.000	Thallium (Tl):	NR
Barium (Ba):	70.000	Copper (Cu):	130.000	Silver (Ag):	21.000	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	129.000	Vanadium (V):	45.000
Boron (B):	280.000	Lithium (Li):	210.000	Strontium (Sr):	6,520.000	Zinc (Zn):	1,250.000
Bromide (Br):	NR					Zirconium (Zr):	23.000

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	7,144.250	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	7,394.390	Hardness as CaCO3:	3,235.710	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	7,000.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	7,689.000	Akalinity as CaCO3:	404.340	Phosphate, TD (mg/L as P):	NR
Field pH:	7.700	Ryznar Stability Index:	4.572	Field Nitrate (mg/L):	NR
Lab pH:	7.870	Sodium Adsorption Ratio:	7.760	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	13.000	Langlier Saturation Index:	1.649	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Sulfide Total(mg/L-S) L.1

Notes

Sample Condition: SAMPLED FROM HOUSE TAP *
Field Remarks: LOCATION: 4 MI SE PLEASANT VALLEY COMMUNITY HALL * OWNER: WALLACE SEXTON - BOX 3068 - WOLF POINT MT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2500	3211	9/23/1980 4:25:00 PM	SEXTON WALLACE * LOCATION IN REMARKS	26N 48E 15 BCCC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	470.000 mg/L	---	---	---
Magnesium (Mg)	501.000 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,015.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	5.000 mg/L	---	---	---
Iron (Fe)	0.050 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.013 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	13.400 mg/L	---	---	---
Bicarbonate (HCO3)	493.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	57.800 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	4,830.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	6.510 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.120 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	120.000 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	0.200 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	70.000 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	280.000 ug/L	---	---	---
Cadmium (Cd)	7.000 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	20.000 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	130.000 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	210.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	50.000 ug/L	---	---	5 ug/L
Nickel (Ni)	70.000 ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	129.000 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	21.000 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	6,520.000 ug/L	---	---	---
Titanium (Ti)	59.000 ug/L	---	---	---
Vanadium (V)	45.000 ug/L	---	---	---
Zinc (Zn)	1,250.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	23.000 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i e odor, color, etc.) and is not a health standard

MP 14

Ground-Water Information Center
Site Name: MUELLER ARNOLD * 4 5 MI SW NICKWALL DAM

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0601 / 3210	**Sample Date:**	10/6/1978
Location (TRS):	26N 48E 02 DBAC	**Agency/Sampler:**	USGS / MRT
Latitude/Longitude:	48° 2' 2" N 105° 28' 50" W	**Field Number:**	NGP-556
Datum:	NAD27	**Lab Date:**	2/5/1979
Altitude:	2170.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK, 211HLCK	**Total Depth (ft):**	203.000
USGS 7.5' Quad:	CHELSEA SW 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	173.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	2.800	0.140	Bicarbonate (HCO3)	1,251.000	20.504
Magnesium (Mg)	1.100	0.091	Carbonate (CO3)	26.400	1.418
Sodium (Na)	626.000	27.231	Chloride (Cl)	32.150	0.907
Potassium (K)	1.800	0.046	Sulfate (SO4)	205.000	4.270
Iron (Fe)	0.020	0.001	Nitrate (as N)	1.000	0.071
Manganese (Mn)	<.01	0.000	Fluoride (F)	5.200	0.274
Silica (SiO2)	10.200		Orthophosphate (OPO4)	NR	0.000
Total Cations		27.508	**Total Anions**		27.444

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.1	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	80.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,527.930	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,162.670	Hardness as CaCO3:	11.520	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,360.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,318.000	Akalinity as CaCO3:	1,070.070	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	7.447	Field Nitrate (mg/L):	NR
Lab pH:	8.600	Sodium Adsorption Ratio:	80.260	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0.577	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	350.000	Sulfide Total(mg/L-S)	0.280

Notes

Sample Condition:
Field Remarks: NGP-556 * CASING SEALED * SANDY WATER * WELL PUMPED 45 MIN BEFORE SAMPLING * PH METER NOT WORKING *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0601	3210	10/6/1978	MUELLER ARNOLD * 4.5 MI SW NICKWALL DAM	26N 48E 02 DBAC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	2.800 mg/L	---	---	---
Magnesium (Mg)	1.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	626.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	1.800 mg/L	---	---	---
Iron (Fe)	0.020 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	10.200 mg/L	---	---	---
Bicarbonate (HCO3)	1,251.000 mg/L	---	---	---
Carbonate (CO3)	26.400 mg/L	---	---	---
Chloride (Cl)	32.150 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	205.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	1.000 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	5.200 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	80.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc) and is not a health standard

MPP7

Ground-Water Information Center | **Water Quality Report**

Site Name: UNKNOWN * 10 MI S PRAIRIE ELK SCHOOL | **Report Date:** 3/21/2005

Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1965Q0042 / 895193	**Sample Date:**	9/10/1965
Location (TRS):	21N 45E 12 BB	**Agency/Sampler:**	/
Latitude/Longitude:	47° 39' 26" N 105° 53' 49" W	**Field Number:**	
Datum:	NAD27	**Lab Date:**	
Altitude:		**Lab/Analyst:**	/
County/State:	MCCONE / MT	**Sample Method/Handling:**	DRILL STEM TEST /
Site Type:	PETWELL	**Procedure Type:**	DISSOLVED
Geology:	331KBBY		
USGS 7.5' Quad:	GLENDIVE		
PWS Id:			
Project:	DEEPAQU		
Sample Water Use:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	360.000	17.964	Bicarbonate (HCO3)	488.000	7.998
Magnesium (Mg)	47.000	3.868	Carbonate (CO3)	0.000	0.000
Sodium (Na)	4,400.000	191.400	Chloride (Cl)	3,600.000	101.556
Potassium (K)	70.000	1.791	Sulfate (SO4)	5,000.000	104.150
Iron (Fe)	NR	0.000	Nitrate (as N)	NR	0.000
Manganese (Mn)	NR	0.000	Fluoride (F)	NR	0.000
Silica (SiO2)	NR		Orthophosphate (OPO4)	NR	0.000
Total Cations		215.022	**Total Anions**		213.704

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	13,717.390	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	13,965.000	Hardness as CaCO3:	1,092.370	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	NR	Akalinity as CaCO3:	400.240	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.283	Field Nitrate (mg/L):	NR
Lab pH:	7.400	Sodium Adsorption Ratio:	57.930	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	NR	Langlier Saturation Index:	1.059	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Diss Solids (rpt mg/L)	13,700.000	Lithium Tr (ug/L-Li)	8,000.000	Resistivity At 68 F	0.600

Notes

Sample Condition:
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1965Q0042	895193	9/10/1965	UNKNOWN * 10 MI S PRAIRIE ELK SCHOOL	21N 45E 12 BB	PETWELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	360.000 mg/L	---	---	---
Magnesium (Mg)	47.000 mg/L	---	2,000 mg/L	---
Sodium (Na)	4,400.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	70.000 mg/L	---	---	---
Iron (Fe)	NR mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	NR mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	NR mg/L	---	---	---
Bicarbonate (HCO3)	488.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	3,600.000 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	5,000.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	NR mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	NR mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: FILLWORTH R CIRCLE MT 20 MI NW CIRCLE MT

MPP 17

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1288 / 2616	**Sample Date:**	9/3/1975 10:50:00 AM
Location (TRS):	21N 45E 16 ABBC	**Agency/Sampler:**	USGS / WAC
Latitude/Longitude:	47° 35' 6" N 105° 57' 0" W	**Field Number:**	MC-38
Datum:	NAD27	**Lab Date:**	10/8/1975
Altitude:	2500.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125LEBO	**Total Depth (ft):**	201.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	192.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	121.100	6.043	Bicarbonate (HCO3)	1,018.900	16.700
Magnesium (Mg)	42.600	3.506	Carbonate (CO3)	0.000	0.000
Sodium (Na)	1,127.500	49.046	Chloride (Cl)	9.750	0.275
Potassium (K)	4.600	0.118	Sulfate (SO4)	2,016.600	42.006
Iron (Fe)	0.020	0.001	Nitrate (as N)	3.400	0.243
Manganese (Mn)	0.170	0.006	Fluoride (F)	0.600	0.032
Silica (SiO2)	16.000		Orthophosphate (OPO4)	NR	0.000
Total Cations		58.720	**Total Anions**		59.255

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	3,844.260	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	4,361.240	Hardness as CaCO3:	477.730	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	4,750.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	5,012.000	Akalinity as CaCO3:	835.670	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.970	Field Nitrate (mg/L):	NR
Lab pH:	6.920	Sodium Adsorption Ratio:	22.450	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0.475	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition:
Field Remarks: SHALLOW GW 048 CLEAR H2O COLLECTED FROM DISCHARGE PIPE LITHOLOGY IS ON SYSTEM 2000
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1288	2616	9/3/1975 10:50:00 AM	FILLWORTH R CIRCLE MT 20 MI NW CIRCLE MT	21N 45E 16 ABBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	121.100 mg/L	---	---	---
Magnesium (Mg)	42.600 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,127.500 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	4.600 mg/L	---	---	---
Iron (Fe)	0.020 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.170 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	16.000 mg/L	---	---	---
Bicarbonate (HCO3)	1,018.900 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	9.750 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	2,016.600 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	3.400 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.600 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: TWITCHELL JOHN * 5 MI S WELDON MT

MA1

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1787 / 2617	**Sample Date:**	11/19/1975 2:22:00 PM
Location (TRS):	21N 45E 20 DCCD	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 33' 29" N 105° 58' 14" W	**Field Number:**	MC-113
Datum:	NAD27	**Lab Date:**	1/19/1976
Altitude:	2480.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 3120
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125LEBO	**Total Depth (ft):**	89 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	56.600	2.824	Bicarbonate (HCO3)	867 600	14 220
Magnesium (Mg)	36.600	3.012	Carbonate (CO3)	0.000	0 000
Sodium (Na)	810 000	35 235	Chloride (Cl)	8.950	0.252
Potassium (K)	5 600	0 143	Sulfate (SO4)	1,319 500	27 485
Iron (Fe)	0.490	0.026	Nitrate (as N)	0 300	0 021
Manganese (Mn)	0.110	0.004	Fluoride (F)	NR	0 000
Silica (SiO2)	9.600		Orthophosphate (OPO4)	NR	0 000
Total Cations		41.342	**Total Anions**		41 979

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	<10.	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	<30.	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	50.000	Selenium (Se):	<2.0	Vanadium (V):	NR
Boron (B):	590.000	Lithium (Li):	80.000	Strontium (Sr):	1,850 000	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,675 140	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,115 350	Hardness as CaCO3:	291 980	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,600.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,531.000	Akalinity as CaCO3:	711 580	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.930	Field Nitrate (mg/L):	NR
Lab pH:	7 860	Sodium Adsorption Ratio:	20.620	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0 965	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes
Sample Condition:
Field Remarks: SHALLOW GW 048
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1787	2617	11/19/1975 2:22:00 PM	TWITCHELL JOHN * 5 MI S WELDON MT	21N 45E 20 DCCD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	56.600 mg/L	---	---	---
Magnesium (Mg)	36.600 mg/L	---	2,000 mg/L	---
Sodium (Na)	810.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	5.600 mg/L	---	---	---
Iron (Fe)	0.490 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.110 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	9.600 mg/L	---	---	---
Bicarbonate (HCO3)	867.600 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	8.950 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,319.500 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.300 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	NR mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<30. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	590.000 ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	50.000 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	80.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<10. ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<2.0 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	1,850.000 ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

MAL 7

Ground-Water Information Center
Site Name: DREYER RAY * 35 M NW CIRCLE MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1283 / 2619	**Sample Date:**	8/18/1975 10:15:00 AM
Location (TRS):	21N 45E 34 BBDA	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 32' 24" N 105° 56' 8" W	**Field Number:**	MC-33
Datum:	NAD27	**Lab Date:**	10/8/1975
Altitude:	2520.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	110ALVM	**Total Depth (ft):**	17.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	163 800	8.174	Bicarbonate (HCO3)	915.000	14.997
Magnesium (Mg)	311 100	25 600	Carbonate (CO3)	0 000	0 000
Sodium (Na)	1,116 000	48 546	Chloride (Cl)	44.450	1 254
Potassium (K)	19 200	0 491	Sulfate (SO4)	3,171.900	66 071
Iron (Fe)	0.030	0 002	Nitrate (as N)	25.800	1 842
Manganese (Mn)	0.110	0 004	Fluoride (F)	0.500	0 026
Silica (SiO2)	17.000		Orthophosphate (OPO4)	NR	0.000
	Total Cations	82 817		**Total Anions**	84.190

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	5,320 630	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	5,784 890	Hardness as CaCO3:	1,689 500	T P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	6,000 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	6,542 000	Akalinity as CaCO3:	750 460	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5 591	Field Nitrate (mg/L):	NR
Lab pH:	7 230	Sodium Adsorption Ratio:	11.810	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	8 000	Langlier Saturation Index:	0 820	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: WATER WAS COLORED *
Field Remarks: USGS * WELL INSIDE SHEEP BARN * JET PUMP WAS USED * COLLECTED AT SOITER POINT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1283	2619	8/18/1975 10:15:00 AM	DREYER RAY * 35 M NW CIRCLE MT	21N 45E 34 BBDA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	163.800 mg/L	---	---	---
Magnesium (Mg)	311.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,116.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	19.200 mg/L	---	---	---
Iron (Fe)	0.030 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.110 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	17.000 mg/L	---	---	---
Bicarbonate (HCO3)	915.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	44.450 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	3,171.900 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	25.800 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.500 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard.

Ground-Water Information Center **Water Quality Report**

Site Name: PAINE EDWARD * 20 MI N SCHMIDT SCHOOL **Report Date:** 3/21/2005

Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1205 / 2615	**Sample Date:**	8/7/1975 8:55:00 AM
Location (TRS):	21N 44E 23 BBDC	**Agency/Sampler:**	USGS / LAK
Latitude/Longitude:	47° 34' 8" N 106° 2' 33" W	**Field Number:**	MC-83
Datum:	NAD27	**Lab Date:**	10/17/1975
Altitude:	2460.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125LEBO	**Total Depth (ft):**	123.000
USGS 7.5' Quad:	JORDAN	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	27 900	1 392	Bicarbonate (HCO3)	1,283.900	21 043
Magnesium (Mg)	11.200	0 922	Carbonate (CO3)	0.000	0 000
Sodium (Na)	1,230.000	53.505	Chloride (Cl)	14.950	0 422
Potassium (K)	4.700	0.120	Sulfate (SO4)	1,659.500	34 567
Iron (Fe)	0 020	0.001	Nitrate (as N)	2 800	0.200
Manganese (Mn)	0 020	0.001	Fluoride (F)	1.000	0.053
Silica (SiO2)	6.800		Orthophosphate (OPO4)	NR	0.000
Total Cations		55.941	**Total Anions**		56.285

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	3,591.350	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	4,242.790	Hardness as CaCO3:	115 770	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	4,990.000	Akalinity as CaCO3:	1,053.020	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	6.414	Field Nitrate (mg/L):	NR
Lab pH:	7 650	Sodium Adsorption Ratio:	49 740	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.000	Langlier Saturation Index:	0.618	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition:
Field Remarks: SHALLOW GW 048
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1205	2615	8/7/1975 8:55:00 AM	PAINE EDWARD * 20 MI N SCHMIDT SCHOOL	21N 44E 23 BBDC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	27.900 mg/L	---	---	---
Magnesium (Mg)	11.200 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,230.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	4.700 mg/L	---	---	---
Iron (Fe)	0.020 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	6.800 mg/L	---	---	---
Bicarbonate (HCO3)	1,283.900 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	14.950 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,659.500 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	2.800 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e. odor, color, etc) and is not a health standard

MA85

Ground-Water Information Center
Site Name: HUSEBY D. * 7 M W CIRCLE MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1194 / 2377	**Sample Date:**	7/29/1975 11:36:00 AM
Location (TRS):	19N 47E 20 ADDC	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 23' 29" N 105° 44' 51" W	**Field Number:**	MC-31
Datum:	NAD27	**Lab Date:**	10/8/1975
Altitude:	2580.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TGRV	**Total Depth (ft):**	20.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	63.400	3.164	Bicarbonate (HCO3)	878.400	14.397
Magnesium (Mg)	66.200	5.448	Carbonate (CO3)	0.000	0.000
Sodium (Na)	445.000	19.358	Chloride (Cl)	5.700	0.161
Potassium (K)	5.400	0.138	Sulfate (SO4)	673.000	14.019
Iron (Fe)	0.180	0.010	Nitrate (as N)	0.800	0.057
Manganese (Mn)	0.080	0.003	Fluoride (F)	0.300	0.016
Silica (SiO2)	8.600		Orthophosphate (OPO4)	NR	0.000
Total Cations		28.119	**Total Anions**		28.649

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,701.370	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,147.060	Hardness as CaCO3:	430.790	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	NR	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,369.000	Akalinity as CaCO3:	720.440	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	6.421	Field Nitrate (mg/L):	NR
Lab pH:	7.260	Sodium Adsorption Ratio:	9.330	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	5.500	Langlier Saturation Index:	0.420	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: * SHALLOW GW 048. * 150 FEET NW HUSEBY'S HOUSE *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1194	2377	7/29/1975 11:36:00 AM	HUSEBY D. * 7 M W CIRCLE MT	19N 47E 20 ADDC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	63.400 mg/L	---	---	---
Magnesium (Mg)	66.200 mg/L	---	2,000 mg/L	---
Sodium (Na)	445.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	5.400 mg/L	---	---	---
Iron (Fe)	0.180 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.080 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.600 mg/L	---	---	---
Bicarbonate (HCO3)	878.400 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	5.700 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	673.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.800 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.300 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: PAWLOWSKI OTTO * 3.5 MI N CIRCLE

MAP 5

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1692 / 2490	**Sample Date:**	9/27/1975 10:30:00 AM
Location (TRS):	20N 48E 22 CCCD	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 28' 9" N 105° 35' 42" W	**Field Number:**	MC-44
Datum:	NAD27	**Lab Date:**	1/19/1976
Altitude:	2600.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125TGRV	**Total Depth (ft):**	276 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	66 100	3 298	Bicarbonate (HCO3)	932 500	15.284
Magnesium (Mg)	97 300	8 007	Carbonate (CO3)	0 000	0 000
Sodium (Na)	574.000	24.969	Chloride (Cl)	11 050	0.312
Potassium (K)	7 200	0 184	Sulfate (SO4)	1,014 900	21.140
Iron (Fe)	<.01	0.000	Nitrate (as N)	1 400	0.100
Manganese (Mn)	0.040	0.001	Fluoride (F)	NR	0.000
Silica (SiO2)	6.100		Orthophosphate (OPO4)	NR	0.000
	Total Cations	36 460		**Total Anions**	36.836

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,237 450	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,710 590	Hardness as CaCO3:	565.540	T P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,100 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,089.000	Akalinity as CaCO3:	764.810	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.782	Field Nitrate (mg/L):	NR
Lab pH:	7.810	Sodium Adsorption Ratio:	10 500	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	1.014	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: SHALLOW GW048* WELL 180 FT FROM PAWLOWSKI'S HOUSE*
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U S Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1692	2490	9/27/1975 10:30:00 AM	PAWLOWSKI OTTO * 3.5 MI N CIRCLE	20N 48E 22 CCCD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	66.100 mg/L	---	---	---
Magnesium (Mg)	97.300 mg/L	---	2,000 mg/L	---
Sodium (Na)	574.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	7.200 mg/L	---	---	---
Iron (Fe)	<.01 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.040 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	6.100 mg/L	---	---	---
Bicarbonate (HCO3)	932.500 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	11.050 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,014.900 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	1.400 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	NR mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

MARS

Ground-Water Information Center
Site Name: JAMES MATTHEW * 7 MI NE OF CIRCLE

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1788 / 2378	**Sample Date:**	11/18/1975 10:09:00 AM
Location (TRS):	19N 48E 02 CBDA	**Agency/Sampler:**	USGS / WRC
Latitude/Longitude:	47° 25' 54" N 105° 34' 16" W	**Field Number:**	MC-114
Datum:	NAD27	**Lab Date:**	1/19/1976
Altitude:	2500.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 3120
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TGRV	**Total Depth (ft):**	109 000
USGS 7 5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	86 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	9.300	0 464	Bicarbonate (HCO3)	1,191 200	19 524
Magnesium (Mg)	9 300	0.765	Carbonate (CO3)	0 000	0.000
Sodium (Na)	584 000	25 404	Chloride (Cl)	17 250	0 487
Potassium (K)	3 200	0.082	Sulfate (SO4)	344.000	7.166
Iron (Fe)	0 050	0 003	Nitrate (as N)	0.100	0.007
Manganese (Mn)	0 010	0 000	Fluoride (F)	1 000	0 053
Silica (SiO2)	7.900		Orthophosphate (OPO4)	NR	0 000
Total Cations		26.749	**Total Anions**		27 236

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	<10.	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	<30.	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<50.	Selenium (Se):	<2.0	Vanadium (V):	NR
Boron (B):	180.000	Lithium (Li):	30 000	Strontium (Sr):	600.000	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	1,562.910	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,167.310	Hardness as CaCO3:	61.500	T P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	2,350.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	2,321.000	Akalinity as CaCO3:	976.990	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	6 933	Field Nitrate (mg/L):	NR
Lab pH:	8.150	Sodium Adsorption Ratio:	32 400	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.500	Langlier Saturation Index:	0 608	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition: SHALLOW GW 048*WATER WAS BROWN*
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1788	2378	11/18/1975 10:09:00 AM	JAMES MATTHEW * 7 MI NE OF CIRCLE	19N 48E 02 CBDA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	9.300 mg/L	---	---	---
Magnesium (Mg)	9.300 mg/L	---	2,000 mg/L	---
Sodium (Na)	584.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.200 mg/L	---	---	---
Iron (Fe)	0.050 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.010 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.900 mg/L	---	---	---
Bicarbonate (HCO3)	1,191.200 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	17.250 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	344.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.100 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<30. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	180.000 ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<50. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	30.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<10. ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<2.0 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	600.000 ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

M&R 14

Ground-Water Information Center
Site Name: SHEFELBINE ORVILLE * 11 5 MI N VIDA MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0615 / 3213	**Sample Date:**	9/30/1978
Location (TRS):	26N 48E 21 BAA	**Agency/Sampler:**	USGS / MRT
Latitude/Longitude:	47° 59' 54" N 105° 31' 34" W	**Field Number:**	NGP-554
Datum:	NAD27	**Lab Date:**	2/5/1979
Altitude:	2250.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK	**Total Depth (ft):**	307 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	285 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	68 000	3.393	Bicarbonate (HCO3)	982 000	16 095
Magnesium (Mg)	54 800	4 509	Carbonate (CO3)	0 000	0 000
Sodium (Na)	977 000	42.500	Chloride (Cl)	62.500	1.763
Potassium (K)	5.000	0 128	Sulfate (SO4)	1,511 000	31.474
Iron (Fe)	2 190	0.118	Nitrate (as N)	16 100	1.149
Manganese (Mn)	0 180	0.007	Fluoride (F)	0 200	0 011
Silica (SiO2)	8 200		Orthophosphate (OPO4)	NR	0 000
Total Cations		50 654	**Total Anions**		50 492

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	0 400	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	160 000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	3,188.910	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,687.170	Hardness as CaCO3:	395 350	T.P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	4,450.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	4,316.000	Akalinity as CaCO3:	805 410	Phosphate, TD (mg/L as P):	NR
Field pH:	7 600	Ryznar Stability Index:	5.633	Field Nitrate (mg/L):	NR
Lab pH:	7 890	Sodium Adsorption Ratio:	21 380	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	1 129	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	4,940 000	Sulfide Total(mg/L-S)	L 10

Notes

Sample Condition: NGP-554 * RUSTY WATER * PUMPED 40 MIN BEFORE SAMPLING *
Field Remarks:
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0615	3213	9/30/1978	SHEFELBINE ORVILLE * 11.5 MI N VIDA MT	26N 48E 21 BAA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	68.000 mg/L	---	---	---
Magnesium (Mg)	54.800 mg/L	---	2,000 mg/L	---
Sodium (Na)	977.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	5.000 mg/L	---	---	---
Iron (Fe)	2.190 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.180 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	8.200 mg/L	---	---	---
Bicarbonate (HCO3)	982.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	62.500 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,511.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	16.100 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.200 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	160.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.400 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e. odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: SHEFELBINE ORVILLE *

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2501 / 3212	**Sample Date:**	9/23/1980 4:20:00 PM
Location (TRS):	26N 48E 21 ABBC	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 59' 51" N 105° 31' 39" W	**Field Number:**	1-111
Datum:	NAD27	**Lab Date:**	1/14/1981
Altitude:	2290.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK	**Total Depth (ft):**	67.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	62.800	3.134	Bicarbonate (HCO3)	791.000	12.964
Magnesium (Mg)	39.600	3.259	Carbonate (CO3)	0.000	0.000
Sodium (Na)	897.000	39.020	Chloride (Cl)	26.200	0.739
Potassium (K)	6.400	0.164	Sulfate (SO4)	1,528.000	31.828
Iron (Fe)	0.190	0.010	Nitrate (as N)	1.350	0.096
Manganese (Mn)	0.210	0.008	Fluoride (F)	0.550	0.029
Silica (SiO2)	10.100		Orthophosphate (OPO4)	NR	0.000
Total Cations		45.704	**Total Anions**		45.657

Trace Element Results (µg/L)

Aluminum (Al):	<40.	Cadmium (Cd):	<2.	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	50.000	Titanium (Ti):	20.000
Arsenic (As):	1.400	Cobalt (Co):	NR	Nickel (Ni):	50.000	Thallium (Tl):	NR
Barium (Ba):	100.000	Copper (Cu):	34.000	Silver (Ag):	5.000	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	1.000	Vanadium (V):	7.000
Boron (B):	730.000	Lithium (Li):	140.000	Strontium (Sr):	1,690.000	Zinc (Zn):	120.000
Bromide (Br):	NR					Zirconium (Zr):	7.000

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,962.210	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,363.550	Hardness as CaCO3:	319.810	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,950.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	7,689.000	Akalinity as CaCO3:	648.760	Phosphate, TD (mg/L as P):	NR
Field pH:	7.300	Ryznar Stability Index:	6.020	Field Nitrate (mg/L):	NR
Lab pH:	7.760	Sodium Adsorption Ratio:	21.830	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	NR	Langlier Saturation Index:	0.870	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Sulfide Total(mg/L-S) 0.100

Notes

Sample Condition:
Field Remarks: SAMPLED AT WELL HEAD * OWNER: ORVILLE SHEFELBINE - BOX 3082 - WOLF POINT MT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; ***** = Duplicate analysis not within control limits; ****** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2501	3212	9/23/1980 4:20:00 PM	SHEFELBINE ORVILLE *	26N 48E 21 ABBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	62.800 mg/L	---	---	---
Magnesium (Mg)	39.600 mg/L	---	2,000 mg/L	---
Sodium (Na)	897.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	6.400 mg/L	---	---	---
Iron (Fe)	0.190 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.210 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	10.100 mg/L	---	---	---
Bicarbonate (HCO3)	791.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	26.200 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,528.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	1.350 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.550 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	<40. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	1.400 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	100.000 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	730.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	34.000 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	140.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	50.000 ug/L	---	---	5 ug/L
Nickel (Ni)	50.000 ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	1.000 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	5.000 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	1,690.000 ug/L	---	---	---
Titanium (Ti)	20.000 ug/L	---	---	---
Vanadium (V)	7.000 ug/L	---	---	---
Zinc (Zn)	120.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	7.000 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e odor, color, etc) and is not a health standard.

Ground-Water Information Center
Site Name: GASS MILTON * 18 MI SW VIDA MT

MPR 9

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0535 / 2899	**Sample Date:**	9/27/1978
Location (TRS):	23N 45E 12 DCC	**Agency/Sampler:**	USGS / MRT
Latitude/Longitude:	47° 45' 34" N 105° 53' 9" W	**Field Number:**	NGP-551
Datum:	NAD27	**Lab Date:**	1/19/1979
Altitude:	2350.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125FRUN	**Total Depth (ft):**	268.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	254.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	22.800	1.138	Bicarbonate (HCO3)	1,713.000	28.076
Magnesium (Mg)	9.400	0.774	Carbonate (CO3)	0.000	0.000
Sodium (Na)	1,470.000	63.945	Chloride (Cl)	13.900	0.392
Potassium (K)	3.900	0.100	Sulfate (SO4)	1,794.000	37.369
Iron (Fe)	0.050	0.003	Nitrate (as N)	2.600	0.186
Manganese (Mn)	0.020	0.001	Fluoride (F)	0.700	0.037
Silica (SiO2)	17.400		Orthophosphate (OPO4)	NR	0.000
Total Cations		65.959	**Total Anions**		66.060

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.1	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	150.000	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	4,178.610	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	5,047.770	Hardness as CaCO3:	95.620	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	5,800.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	5,599.000	Akalinity as CaCO3:	1,404.950	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	5.749	Field Nitrate (mg/L):	NR
Lab pH:	8.240	Sodium Adsorption Ratio:	65.410	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	11.000	Langlier Saturation Index:	1.246	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe) 1,180.000 Sulfide Total(mg/L-S) 0.950

Notes

Sample Condition:
Field Remarks: NGP-551 * PUMPED 45 MIN BEFORE SAMPLING * CASING SEALED* SLIGHT RUST STAIN ON FILTER *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0535	2899	9/27/1978	GASS MILTON * 18 MI SW VIDA MT	23N 45E 12 DCC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	22.800 mg/L	---	---	---
Magnesium (Mg)	9.400 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,470.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.900 mg/L	---	---	---
Iron (Fe)	0.050 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.020 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	17.400 mg/L	---	---	---
Bicarbonate (HCO3)	1,713.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	13.900 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,794.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	2.600 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	0.700 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	150.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.1 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e odor, color, etc.) and is not a health standard

Ground-Water Information Center
Site Name: WRIGHT STEWART * 15 MI NE VIDA MT

MA 10

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1979Q0549 / 2901	**Sample Date:**	9/27/1978
Location (TRS):	23N 46E 03 C	**Agency/Sampler:**	USGS / MRT
Latitude/Longitude:	47° 46' 35" N 105° 48' 27" W	**Field Number:**	NGP552
Datum:	NAD27	**Lab Date:**	1/19/1979
Altitude:	2500.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 5320
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK	**Total Depth (ft):**	365 000
USGS 7 5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	8.100	0 404	Bicarbonate (HCO3)	1,315.000	21.553
Magnesium (Mg)	3 100	0.255	Carbonate (CO3)	12.500	0.672
Sodium (Na)	954.000	41.499	Chloride (Cl)	25.700	0.725
Potassium (K)	2 500	0.064	Sulfate (SO4)	947 000	19.726
Iron (Fe)	0 100	0.005	Nitrate (as N)	2.621	0.187
Manganese (Mn)	<.01	0 000	Fluoride (F)	2 200	0 116
Silica (SiO2)	13.500		Orthophosphate (OPO4)	NR	0 000
Total Cations		42 388	**Total Anions**		42 978

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	<.5	Vanadium (V):	NR
Boron (B):	1,630.000	Lithium (Li):	130.000	Strontium (Sr):	440.000	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,619 100	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,286 320	Hardness as CaCO3:	32.990	T.P Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,900 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,757 000	Akalinity as CaCO3:	1,099.370	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	6 721	Field Nitrate (mg/L):	NR
Lab pH:	8 380	Sodium Adsorption Ratio:	72.280	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	13.000	Langlier Saturation Index:	0 830	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Iron Tr (ug/L-Fe)	500.000	Sulfide Total(mg/L-S)	0 780

Notes

Sample Condition:
Field Remarks: NGP552 * SAMPLE COLLECTED FROM 15 FT PIPE AFTER 40 MIN PUMPING * RUST STAIN ON FILTER *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards) Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1979Q0549	2901	9/27/1978	WRIGHT STEWART * 15 MI NE VIDA MT	23N 46E 03 C	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	8.100 mg/L	---	---	---
Magnesium (Mg)	3.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	954.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.500 mg/L	---	---	---
Iron (Fe)	0.100 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	<.01 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	13.500 mg/L	---	---	---
Bicarbonate (HCO3)	1,315.000 mg/L	---	---	---
Carbonate (CO3)	12.500 mg/L	---	---	---
Chloride (Cl)	25.700 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	947.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	2.621 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.200 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	1,630.000 ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	130.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	<.5 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	440.000 ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc) and is not a health standard

Ground-Water Information Center
Site Name: GIBBS DAVID * 3 5 MI E WELDON MT *

MPR 8

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1975Q1291 / 2754	**Sample Date:**	9/5/1975 11:05:00 AM
Location (TRS):	22N 46E 33 DBBD	**Agency/Sampler:**	USGS / LAK
Latitude/Longitude:	47° 37' 18" N 105° 49' 13" W	**Field Number:**	MC-87
Datum:	NAD27	**Lab Date:**	10/15/1975
Altitude:	2487.00	**Lab/Analyst:**	MBMG / LAW
County/State:	MCCONE / MT	**Sample Method/Handling:**	GRAB / 1000
Site Type:	WELL	**Procedure Type:**	
Geology:	125LEBO, 125TGRV	**Total Depth (ft):**	210 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	130 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	8 100	0.404	Bicarbonate (HCO3)	819.800	13 437
Magnesium (Mg)	3 900	0 321	Carbonate (CO3)	0.000	0.000
Sodium (Na)	825 000	35.888	Chloride (Cl)	21 950	0 619
Potassium (K)	2.800	0 072	Sulfate (SO4)	1,068.200	22 251
Iron (Fe)	0.040	0 002	Nitrate (as N)	5 600	0 400
Manganese (Mn)	0.010	0.000	Fluoride (F)	2 300	0 121
Silica (SiO2)	7.800		Orthophosphate (OPO4)	NR	0 000
Total Cations		36 687	**Total Anions**		36 827

Trace Element Results (µg/L)

Aluminum (Al):	NR	Cadmium (Cd):	NR	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	NR	Molybdenum (Mo):	NR	Titanium (Ti):	NR
Arsenic (As):	NR	Cobalt (Co):	NR	Nickel (Ni):	NR	Thallium (Tl):	NR
Barium (Ba):	NR	Copper (Cu):	NR	Silver (Ag):	NR	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	NR	Selenium (Se):	NR	Vanadium (V):	NR
Boron (B):	NR	Lithium (Li):	NR	Strontium (Sr):	NR	Zinc (Zn):	NR
Bromide (Br):	NR					Zirconium (Zr):	NR

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,349.540	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,765 500	Hardness as CaCO3:	36 280	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,400 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,456.000	Akalinity as CaCO3:	672.380	Phosphate, TD (mg/L as P):	NR
Field pH:	NR	Ryznar Stability Index:	8.698	Field Nitrate (mg/L):	NR
Lab pH:	6 730	Sodium Adsorption Ratio:	59 610	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	-0.984	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Notes

Sample Condition:
Field Remarks: SHALLOW GW 048 * SUBMERSIBLE ELECTRIC PUMP * CLEAR WATER SAMPLED FROM SAMPLED FROM WATER HOSE *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines. The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation.

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1975Q1291	2754	9/5/1975 11:05:00 AM	GIBBS DAVID * 3.5 MI E WELDON MT *	22N 46E 33 DBBD	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	8.100 mg/L	---	---	---
Magnesium (Mg)	3.900 mg/L	---	2,000 mg/L	---
Sodium (Na)	825.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	2.800 mg/L	---	---	---
Iron (Fe)	0.040 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.010 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.800 mg/L	---	---	---
Bicarbonate (HCO3)	819.800 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	21.950 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,068.200 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	5.600 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.300 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	NR ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	NR ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	NR ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	NR ug/L	---	---	---
Cadmium (Cd)	NR ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	NR ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	NR ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	NR ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	NR ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	NR ug/L	---	---	5 ug/L
Nickel (Ni)	NR ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	NR ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	NR ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	NR ug/L	---	---	---
Titanium (Ti)	NR ug/L	---	---	---
Vanadium (V)	NR ug/L	---	---	---
Zinc (Zn)	NR ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	NR ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; --- = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e odor, color, etc) and is not a health standard

MPl 9

Ground-Water Information Center
Site Name: HERZBERG JOHN * 2.5 MI E ILLMONT SCHOOL

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2529 / 2996	**Sample Date:**	9/30/1980 3:50:00 PM
Location (TRS):	24N 44E 12 DAAA	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 51' 16" N 106° 0' 15" W	**Field Number:**	1-130
Datum:	NAD27	**Lab Date:**	12/10/1980
Altitude:	2430.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	211FHHC	**Total Depth (ft):**	215.000
USGS 7.5' Quad:	WILLIS BUTTES 7 1/2'	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	NR
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	5.400	0.269	Bicarbonate (HCO3)	1,290.000	21.143
Magnesium (Mg)	1.400	0.115	Carbonate (CO3)	0.000	0.000
Sodium (Na)	776.000	33.756	Chloride (Cl)	8.400	0.237
Potassium (K)	0.800	0.020	Sulfate (SO4)	624.000	12.998
Iron (Fe)	0.025	0.001	Nitrate (as N)	0.790	0.056
Manganese (Mn)	0.003	0.000	Fluoride (F)	1.100	0.058
Silica (SiO2)	13.600		Orthophosphate (OPO4)	NR	0.000
Total Cations		34.231	**Total Anions**		34.492

Trace Element Results (µg/L)

Aluminum (Al):	<30.	Cadmium (Cd):	<2	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	<20.	Titanium (Ti):	<1.
Arsenic (As):	<.1	Cobalt (Co):	NR	Nickel (Ni):	<10	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	<2.	Silver (Ag):	<2.	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	0.100	Vanadium (V):	<1.
Boron (B):	690.000	Lithium (Li):	120.000	Strontium (Sr):	120.000	Zinc (Zn):	45.000
Bromide (Br):	NR					Zirconium (Zr):	<4.

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,067.030	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	2,721.560	Hardness as CaCO3:	19.250	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,150.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,052.300	Akalinity as CaCO3:	1,058.020	Phosphate, TD (mg/L as P):	NR
Field pH:	8.400	Ryznar Stability Index:	7.156	Field Nitrate (mg/L):	NR
Lab pH:	8.330	Sodium Adsorption Ratio:	76.980	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	10.000	Langlier Saturation Index:	0.587	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Sulfide Total(mg/L-S) L.1

Notes

Sample Condition:
Field Remarks: SAMPLED FROM DISCHARGE PIPE * OWNER: JOHN HERZBERG - STAR ROUTE BOX C-29 - WOLF POINT MT * MT *
Lab Remarks:

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications. Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2529	2996	9/30/1980 3:50:00 PM	HERZBERG JOHN * 2.5 MI E ILLMONT SCHOOL	24N 44E 12 DAAA	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	5.400 mg/L	---	---	---
Magnesium (Mg)	1.400 mg/L	---	2,000 mg/L	---
Sodium (Na)	776.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	0.800 mg/L	---	---	---
Iron (Fe)	0.025 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.003 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	13.600 mg/L	---	---	---
Bicarbonate (HCO3)	1,290.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	8.400 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	624.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.790 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	1.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	<30. ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<.1 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	690.000 ug/L	---	---	---
Cadmium (Cd)	<2. ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	<2. ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	120.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	<20. ug/L	---	---	5 ug/L
Nickel (Ni)	<10. ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.100 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	120.000 ug/L	---	---	---
Titanium (Ti)	<1. ug/L	---	---	---
Vanadium (V)	<1. ug/L	---	---	---
Zinc (Zn)	45.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	<4. ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i e odor, color, etc) and is not a health standard

MAR 10

Ground-Water Information Center
Site Name: NEFZGER DEAN * 1 MI S VIDA MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2514 / 3003	**Sample Date:**	9/25/1980 9:20:00 AM
Location (TRS):	24N 48E 17 BBAB	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 50' 48" N 105° 35' 40" W	**Field Number:**	1-114
Datum:	NAD27	**Lab Date:**	1/14/1981
Altitude:	2280.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125TLCK	**Total Depth (ft):**	175 000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	155 000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	14 100	0.704	Bicarbonate (HCO3)	1,576 000	25 831
Magnesium (Mg)	7.100	0.584	Carbonate (CO3)	0 000	0.000
Sodium (Na)	1,083 000	47 111	Chloride (Cl)	10 100	0.285
Potassium (K)	3 500	0.090	Sulfate (SO4)	1,245.000	25.933
Iron (Fe)	0 730	0.039	Nitrate (as N)	0 110	0 008
Manganese (Mn)	0.036	0 001	Fluoride (F)	2 000	0 105
Silica (SiO2)	7.800		Orthophosphate (OPO4)	NR	0.000
Total Cations		48.613	**Total Anions**		52 162

Trace Element Results (µg/L)

Aluminum (Al):	380 000	Cadmium (Cd):	2 000	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	<2.	Molybdenum (Mo):	50.000	Titanium (Ti):	18 000
Arsenic (As):	1 400	Cobalt (Co):	NR	Nickel (Ni):	40.000	Thallium (Tl):	NR
Barium (Ba):	50.000	Copper (Cu):	11.000	Silver (Ag):	<2.	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	<40.	Selenium (Se):	0 200	Vanadium (V):	5.000
Boron (B):	330 000	Lithium (Li):	91.000	Strontium (Sr):	510 000	Zinc (Zn):	<4.
Bromide (Br):	NR					Zirconium (Zr):	5.000

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	3,150.220	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,949 870	Hardness as CaCO3:	64.430	T P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	4,400 000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	4,601 300	Akalinity as CaCO3:	1,292.590	Phosphate, TD (mg/L as P):	NR
Field pH:	8 100	Ryznar Stability Index:	6.209	Field Nitrate (mg/L):	NR
Lab pH:	8.270	Sodium Adsorption Ratio:	58.710	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	9 500	Langlier Saturation Index:	1.031	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Sulfide Total(mg/L-S) L.1

Notes

Sample Condition:
Field Remarks: SAMPLED FROM DISCHARGE PIPE * OWNER: DEAN NEFZGER *
Lab Remarks: FU NA 1148 MG/L *

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Drinking water limits are based on U.S. Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S. Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2514	3003	9/25/1980 9:20:00 AM	NEFZGER DEAN * 1 MI S VIDA MT	24N 48E 17 BBAB	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	14.100 mg/L	---	---	---
Magnesium (Mg)	7.100 mg/L	---	2,000 mg/L	---
Sodium (Na)	1,083.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	3.500 mg/L	---	---	---
Iron (Fe)	0.730 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.036 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	7.800 mg/L	---	---	---
Bicarbonate (HCO3)	1,576.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	10.100 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,245.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	0.110 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.000 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	380.000 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	1.400 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	50.000 ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	330.000 ug/L	---	---	---
Cadmium (Cd)	2.000 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	<2. ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	11.000 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	<40. ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	91.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	50.000 ug/L	---	---	5 ug/L
Nickel (Ni)	40.000 ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	0.200 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	<2. ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	510.000 ug/L	---	---	---
Titanium (Ti)	18.000 ug/L	---	---	---
Vanadium (V)	5.000 ug/L	---	---	---
Zinc (Zn)	<4. ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	5.000 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S. Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999. This standard is based on aesthetic quality of water (i.e odor, color, etc) and is not a health standard.

MMR 10

Ground-Water Information Center
Site Name: GULDBERG * 4 MI SE VIDA MT

Water Quality Report
Report Date: 3/21/2005
Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1980Q2513 / 3004	**Sample Date:**	9/24/1980 11:15:00 AM
Location (TRS):	24N 48E 24 BCBC	**Agency/Sampler:**	USGS / MET
Latitude/Longitude:	47° 49' 43" N 105° 30' 39" W	**Field Number:**	1-113
Datum:	NAD27	**Lab Date:**	2/2/1981
Altitude:	2330.00	**Lab/Analyst:**	MBMG / FNA
County/State:	MCCONE / MT	**Sample Method/Handling:**	PUMPED / 4220
Site Type:	WELL	**Procedure Type:**	DISSOLVED
Geology:	125LEBO	**Total Depth (ft):**	65.000
USGS 7.5' Quad:	GLENDIVE	**SWL-MP (ft):**	NR
PWS Id:		**Depth Water Enters (ft):**	45.000
Project:			

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	376.000	18.762	Bicarbonate (HCO3)	684.000	11.211
Magnesium (Mg)	193.000	15.882	Carbonate (CO3)	0.000	0.000
Sodium (Na)	234.000	10.179	Chloride (Cl)	29.200	0.824
Potassium (K)	5.500	0.141	Sulfate (SO4)	1,610.000	33.536
Iron (Fe)	0.048	0.003	Nitrate (as N)	8.740	0.624
Manganese (Mn)	0.007	0.000	Fluoride (F)	2.100	0.111
Silica (SiO2)	17.800		Orthophosphate (OPO4)	NR	0.000
Total Cations		45.069	**Total Anions**		46.305

Trace Element Results (µg/L)

Aluminum (Al):	100.000	Cadmium (Cd):	5.000	Mercury (Hg):	NR	Tin (Sn):	NR
Antimony (Sb):	NR	Chromium (Cr):	9.000	Molybdenum (Mo):	50.000	Titanium (Ti):	52.000
Arsenic (As):	<.1	Cobalt (Co):	NR	Nickel (Ni):	50.000	Thallium (Tl):	NR
Barium (Ba):	<50.	Copper (Cu):	51.000	Silver (Ag):	16.000	Uranium (U):	NR
Beryllium (Be):	NR	Lead (Pb):	40.000	Selenium (Se):	80.000	Vanadium (V):	23.000
Boron (B):	210.000	Lithium (Li):	93.000	Strontium (Sr):	3,050.000	Zinc (Zn):	12.000
Bromide (Br):	NR					Zirconium (Zr):	16.000

Field Chemistry and Other Analytical Results

**Total Dissolved Solids:	2,813.500	Field Hardness as CaCO3:	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents:	3,160.560	Hardness as CaCO3:	1,733.260	T.P. Hydrocarbons (µg/L):	NR
Field Conductivity (µmhos):	3,280.000	Field Alkalinity as CaCO3:	NR	PCP (µg/L):	NR
Lab Conductivity (µmhos):	3,364.000	Akalinity as CaCO3:	561.000	Phosphate, TD (mg/L as P):	NR
Field pH:	7.100	Ryznar Stability Index:	4.732	Field Nitrate (mg/L):	NR
Lab pH:	7.620	Sodium Adsorption Ratio:	2.450	Field Dissolved O2 (mg/L):	NR
Water Temp (°C):	8.000	Langlier Saturation Index:	1.444	Field Chloride (mg/L):	NR
Air Temp (°C):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	NR

Additional Parameters

Sulfide Total(mg/L-S) L.1

Notes

Sample Condition:
Field Remarks: SAMPLED FROM DISCHARGE PIPE * OWNER: GULDBERG - BOX 66 - VIDA MT *
Lab Remarks: RU ALKALINITY IS DECREASING * 684; 323; AND 233 MG/L 11/18; 12/11; AND 12/22/80 RESPECTIVELY *

Explanation: **mg/L** = milligrams per Liter; **µg/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC
Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue

Drinking water limits are based on U.S Environmental Protection Agency primary and secondary standards for public water supplies (view their standards). Stock water and irrigation water recommendations are from U.S Department of Agriculture Natural Resources Conservation Service water-quality guidelines The guidelines are general and my vary depending on specific applications Irrigation guidelines are based on continuous irrigation

Sample Id	GWIC Id	Sample Date	Site Name	Location	Site Type
1980Q2513	3004	9/24/1980 11:15:00 AM	GULDBERG * 4 MI SE VIDA MT	24N 48E 24 BCBC	WELL

Constituent	This Sample	Drinking Water	Stock Water	Irrigation Water
Calcium (Ca)	376.000 mg/L	---	---	---
Magnesium (Mg)	193.000 mg/L	---	2,000 mg/L	---
Sodium (Na)	234.000 mg/L	250 mg/L [smcl]	2,000 mg/L	see SAR
Potassium (K)	5.500 mg/L	---	---	---
Iron (Fe)	0.048 mg/L	0.3 mg/L [smcl]	---	---
Manganese (Mn)	0.007 mg/L	0.05 mg/L [smcl]	---	2.0 mg/L
Silica (SiO2)	17.800 mg/L	---	---	---
Bicarbonate (HCO3)	684.000 mg/L	---	---	---
Carbonate (CO3)	0.000 mg/L	---	---	---
Chloride (Cl)	29.200 mg/L	250 mg/L [smcl]	1,500 mg/L	---
Sulfate (SO4)	1,610.000 mg/L	250 mg/L [smcl]	1,500 mg/L	[b]
Nitrate (NO3 as N)	8.740 mg/L	10 mg/L [mcl]	100 mg/L	---
Fluoride (F)	2.100 mg/L	4 mg/L [mcl]	2 mg/L	---
Ortho-Phosphate (as P)	NR mg/L	---	---	---
Aluminum (Al)	100.000 ug/L	50-200 ug/L [smcl]	---	1,000 ug/L
Antimony (Sb)	NR ug/L	6 ug/L [mcl]	---	---
Arsenic (As)	<.1 ug/L	10 ug/L [mcl]	50 ug/L	100 ug/L
Barium (Ba)	<50. ug/L	2,000 ug/L [mcl]	---	---
Boron (B)	210.000 ug/L	---	---	---
Cadmium (Cd)	5.000 ug/L	5 ug/L [mcl]	10 ug/L	5 ug/L
Chromium (Cr)	9.000 ug/L	100 ug/L [mcl]	1,000 ug/L	100 ug/L
Cobalt (Co)	NR ug/L	---	1,000 ug/L	50 ug/L
Copper (Cu)	51.000 ug/L	1,300 ug/L [mcl]	500 ug/L	200 ug/L
Lead (Pb)	40.000 ug/L	15 ug/L [mcl]	50 ug/L	5,000 ug/L
Lithium (Li)	93.000 ug/L	---	---	2,500 ug/L
Molybdenum (Mo)	50.000 ug/L	---	---	5 ug/L
Nickel (Ni)	50.000 ug/L	---	---	200 ug/L
Phosphate (P)	NR ug/L	---	---	---
Selenium (Se)	80.000 ug/L	50 ug/L [mcl]	50 ug/L	20 ug/L
Silver (Ag)	16.000 ug/L	100 ug/L [smcl]	---	---
Strontium (Sr)	3,050.000 ug/L	---	---	---
Titanium (Ti)	52.000 ug/L	---	---	---
Vanadium (V)	23.000 ug/L	---	---	---
Zinc (Zn)	12.000 ug/L	5,000 ug/L [smcl]	24,000 ug/L	2,000 ug/L
Zirconium (Zr)	16.000 ug/L	---	---	---

Key: **NR** = No reading in GWIC; **mg/L** = milligrams per Liter; **ug/L** = micrograms per Liter; **---** = Currently no standard for this constituent; **[b]** = High concentrations of sulfate may restrict calcium uptake by crops; **[c]** = Varies with crop, generally dissolved solids should be less than 2,000 mg/L (equivalent to specific conductance of about 2,000 to 3,000 micromhos/cm); **[d]** = Dependent upon other variables such as type of clay in soil and salt content of water. (See SAR); **[mcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999; **[smcl]** = U.S Environmental Protection Agency maximum contaminant level or action level: revised October 13, 1999 This standard is based on aesthetic quality of water (i.e. odor, color, etc) and is not a health standard

Appendix C

Existing Water System Information

Dry Red Water
Municipality Data Sheet
For Richey, Montana

A) Current Number of Water Accounts

Residential	129
Commercial	18

B) Current Rate Structure

$15.75 per 1000 plus $2.64 excess 1000

C) Current Cost for 8,000 gallons

Residential	34.23
Commercial	34.23

D) Existing Water System Debt

Loan A__________

Balance	$ NONE
Interest Rate	%
Years Remaining	
Annual Payment	$

Loan B__________

Balance	$ N/A
Interest Rate	%
Years Remaining	
Annual Payment	$

Loan C__________

Balance	$ N/A
Interest Rate	%
Years Remaining	
Annual Payment	$

E) Water System Revenue

FY 2003 – 2004	$ 40,259.00
FY 2004 – 2005	$ 48,591.24

F) Water System Expenses (excluding depreciation)

FY 2003 – 2004	$ 43,061.52
FY 2004 – 2005	$ 44,253.87

G) Are there any anticipated water system loans planned in the next 2 years?

No X

Yes ____

If yes, approximately how much?

Dry Red Water
Municipality Data Sheet
For Jordan, Montana

A) Current Number of Water Accounts

Residential	205
Commercial	45

B) Current Rate Structure

(See attached sheets)

C) Current Cost for 8,000 gallons

Residential	31.13
Commercial	31.13

D) Existing Water System Debt

Loan A RD

Balance	$ 459,000
Interest Rate	.045 %
Years Remaining	30-40
Annual Payment	$ 25,056

Loan B

Balance	$
Interest Rate	%
Years Remaining	
Annual Payment	$

Loan C

Balance	$
Interest Rate	%
Years Remaining	
Annual Payment	$

E) Water System Revenue

FY 2003 – 2004	$ 52,850
FY 2004 – 2005	$ 93,211

F) Water System Expenses (excluding depreciation)

FY 2003 – 2004	$ 41,894
FY 2004 – 2005	$ 70,976

G) Are there any anticipated water system loans planned in the next 2 years?

No X

Yes

If yes, approximately how much?

THE EDU SYSTEN FOR WATER & SEWER SYSTEMS

SYSTEM NAME Town of Jordan

INVENTORY OF CONNECTIONS BY LINE OR METER SIZE

SIZE	NO. OF CONNECTIONS	MULTIPLIER	EDU'S
3/4 INCH	235	1.00	235
1 INCH	9	1.79	16.11
1-1/2INCH	2	4.00	8
2 INCH	2	7.14	14.28
3 INCH	0	16.00	0
4 INCH	2	28.57	57.14
6 INCH		64.29	
8 INCH		113.78	
10 INCH		177.78	
TOTAL			330.53

BASE RATE COST

NEW DEBT SERVICE	$ 25,056.00		$ 2,088.00	MONTH	$	6.32
EXISTING DEBT		YEAR		MONTH		
RESERVE	$ 2,520.00	YEAR	$ 210.00	MONTH	$	0 64
DEPRECIATION		YEAR		MONTH		
OTHER O&M	$ 47,617.00	YEAR	$ 3,968.08	MONTH	$	12.00
		YEAR		MONTH		
TOTAL COST	$ 75,193.00	YEAR	$ 6,266.08	MONTH	$	18.95

TOTAL BASE COST $ 75,193.00

EDU'S 330.53 COST PER MONTH $ 18.95

BASE RATE COST PER EDU'S

THE BASE RATE WILL INCLUDE 2,000 GALS. PER EDU

SIZE	EDU-COST	MULTIPLIER	TOTAL COST
3/4 INCH	$18.95	1	$ 18.95
1 INCH	$18.95	1.79	$ 33.92
1-1/2INCH	$18.95	4	$ 75.80
2 INCH	$18.95	7.14	$ 135.30
3 INCH		16	
4 INCH	$18.95	28.57	$ 541.40
6 INCH		64.29	
8 INCH		115.78	
FIRE SYSTEM		3	$ 56.85

VARIABLE / OPERATION & MAINTENANCE COST & COST PER 1000 GALS WATER SOLD

EDU'S X	GALS PER EDU X	GALS/DAY	GALS./MONTH	GALSYEAR
330.53	114	37680.42	1145484.77	13745817

OPERATION & MAINTENANCE COST $ 27,942.00

NET GALS OF WATER SOLD 13,746 COST/1000GALS $ 2.03

Town of Jordan

UTILITY RATE TABLE

07/31/2004 01:31

SERVICE CODE	RATE CODE	TYPE CODE	DESCRIPTION	BASE RATE	MINIMUM UNITS	ADDITIONAL USE RATE
WATR	A	1	NO SERVICE	.00	0	.00
WATR	B	1	3/4 INCH	18.95	2	2.03
WATR	C	1	1 INCH	33.92	4	2.03
WATR	D	1	1 1/4 INCH	42.64	6	2.03
WATR	E	1	1 1/2 INCH	75.80	8	2.03
WATR	F	1	2 INCH	135.30	15	2.03
WATR	N	1	3/4 INCH, NO METER	18.95	0	.00
WATR	O	1	1 INCH, NO METER	33.92	0	.00
WATR	P	1	1 1/4 INCH, NO METER	42.64	0	.00
WATR	Q	1	1 1/2 INCH, NO METER	75.80	0	.00
WATR	R	1	2 INCH, NO METER	135.30	0	.00

*** END OF REPORT ***

Dry Red Water
Municipality Data Sheet
For Circle, Montana

A) Current Number of Water Accounts

Residential	269
Commercial	80

B) Current Rate Structure

$31.00 for first 2,500 gallons - $2.60 per 1,000 over

C) Current Cost for 8,000 gallons

Residential	$45.30
Commercial	$45.30

D) Existing Water System Debt

Loan A Treatment Plant

Balance	$ 806,111.84
Interest Rate	5% %
Years Remaining	32 years
Annual Payment	$ 50,580.00

Loan B Well #3

Balance	$ 64,419.83
Interest Rate	4.5% %
Years Remaining	27 yers
Annual Payment	$ $5,058.00

Loan C

Balance	$
Interest Rate	%
Years Remaining	
Annual Payment	$

E) Water System Revenue

FY 2003 – 2004	$ 223,684.43
FY 2004 – 2005	$ 213,077.81

F) Water System Expenses (excluding depreciation)

FY 2003 – 2004	$ 216,397.77
FY 2004 – 2005	$ 190,379.31

G) Are there any anticipated water system loans planned in the next 2 years?

No X

Yes

If yes, approximately how much?

Annual Drinking Water Quality Report

Town of Jordan

PWSID#MT0000257
Box 484
Jordan, MT 59337

We're very pleased to provide you with the Annual Water Quality Report. We want to keep you Informed about the excellent water and services we have delivered to you over the past year. Our goal is and always has been, to provide to you a safe and dependable supply of drinking water. At the present time we serve a population of approximately 365 people Our source of water is groundwater from a well. We are in the process of discussing a source water protection plan that will provide more information such as potential sources of contamination.

We're pleased to report that our drinking water is safe and meets federal and state requirements. However, as many of you know, although our water is labeled as safe to drink under the Safe Drinking Water Act, some of the unregulated parameters affect the taste and may affect the health of a limited population. The concerns are sodium and the total dissolved solids in the water. The sodium level is high enough that people with high blood pressure may want to consider a separate source of drinking water. The total dissolved solids are high enough to have a laxative effect on people that have not become conditioned to the water. We are aware of these problems with our source of drinking water, but have been unable to find a solution that is financially feasible.

If you have any questions about this report or concerning your water, please contact **Rocky Nelson.** He is a certified operator with more than 30 years of experience. If you want to learn more about our water, please attend any of our regularly scheduled meetings. They are held on **the first Tuesday of every month at 7:00 pm at City Hall.**

The water is treated with chlorine prior to entering the distribution system. The Town of Jordan routinely monitors for constituents in your drinking water according to Federal and State laws. The following table shows the results of any detects in our monitoring for the period of **January 1st to December 31st, 2005.** For constituents that are not monitored yearly, we have reviewed our records back to the last time the constituent was monitored.

We have monitored for lead and copper, and all of our samples have been in compliance with the Lead and Copper Rule

Parameter	Date	90th % value	Units	Action level	Source of Contamination
Lead	9/4/02	15	Ppb	15	Household plumbing
Copper	9/4/02	0.20	Ppm	1.3	Household plumbing

In the tables above and below you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in $10,000.

Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - (mandatory language) A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Picocuries per liter (pCi/L)-picocuries per liter is a measure of the radioactivity in water.

Maximum Contaminant Level - (mandatory language) The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - (mandatory language) The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Sample Date	Highest Level Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination
Inorganic Contaminants							
Fluoride	N	6/3/03	1.13	ppm	4	4	Erosion of natural deposits
Radioactive Contaminants							
Combined radium)	N	8/6/02	3.2	PCi/L	0	5	Erosion of natural deposits

Our system had no violations. We're proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water **IS SAFE** at these levels.

All sources of drinking water are subject to potential contamination by constituents that are naturally occurring or are man made. Those constituents can be microbes, organic or inorganic chemicals, or radioactive material.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

This report was generated by Energy Laboratories, Inc -- Billings, Montana May 2006.

Appendix D

User Sign-Up Sheet Summary

Name	Address	Twnp	Sec	Rge	Quality	Quantity	Source	Treat	Interest	House	Livestock	House No.	Beef	Sheep	Horses	Others	Comments
Wachmann Enterprise	Pasture tsp	T17N	13	R49E	N	N					Y						improve land
Wachmann Enterprise	pasture tap	T17N	23	49							Y						
Wachmann Enterprise	pasture tap	T17N	26	49							Y						
David Kasten	113 Bob Fudge Road Brockway, M	T17N	20	R46E	N	Y	W	Y	Y	Y	Y	2	200				
L. Jean Nedrud	25 Rodeo Ct. - Bozeman, MT	T23N	28	R47E	Y	Y	W	Y	N							N/A	
Ed & Deanna Brost	Brockway	T21N	25	R47E	Y	Y	W	N	Y	N	Y	2	20				
Dave Harris	936 Hwy 13 N - Circle, MT	T21N	36	R48E	Fair	Y	W	Y	Y	Y	Y	6					
Dale Richard	1053 MT Hwy 201 - Vida, MT	25	28	R50E	N	Y	W	Y	Y	Y	Y	3				30 Pigs	
Jack Larson	404 Skull Creek Rd - Brockway	17	6	45	N	Y	W	Y	Y	Y	Y	5	> 50				
Scot Brown	121 BUFFALO CREEK RD.	21	25	48	N	Y	B	N	Y	Y	Y	3	200				
Harold Rauch	3 Miles W of Bridge - Hwy 528	27	36	47	N	Y	W	Y	Y	Y	Y	2	120				
Bruce & Betty Robinette	52 Horse Creek Rd - Circle, MT	19	9	48	Y	N	B	N	Y	Y		2	0	0	0	0	
Alvin Waller	1010 H Ave - Circle, MT				Y	Y	City	Y	Y	Y	N	2					
Agnes O'Leary Brown	86 Fair Meadow Ln - Polson, MT	23	28	47	Fair	Y	W	N	Y			Unoccupied					
Phillip Haglund, Sr.	Box 68 - Brockway, MT	18	34	45	N	Y	W	Y	Y	Y		2	400				
Bryan & Colleen Stormer	2492 Montana Hwy 13 - Circle	23	18	49	Y	Y	W	N	Y	Y	Y	7		20	2		
Dorothy Suppes	2881 Hwy 13 - Vida, MT	24	25	48	Y	Y	W	N	N			1					
Louis Loges	725 Mt. Hwy. 201 Vida, Mt	25	26	49	N	N	W	Y	Y	Y	Y	4	2		3	3 +	
Albert Howard	22 Miles North of Circle, Mt	23	26	47	Y	Y	W	Y	Y	Y	Y	2	125				
Wilbur Eggebrecht	102 Frontage Rd. Wolf Point, Mt.	24	28	49	Y	Y	W	N	N			4	200		4		
Milton C. Berglee	P.O. Box 123 - Wolf Point, MT	27	34	47	N	Y	W	Y	Y	Y	N	6		X	X	Poultry	
Hanz & Sylvia Haynie	764 Spring Creek Rd - Circle	21	3	47	Y	Y	W	Y	Y	Y	Y	2	200				
Flint Hance	452 MT Hwy 200 W - Circle	19	30	48	N	Y	W	N	Y	Y	Y	4			9	1 Goat	
Don & Marj Haber	181 Beauty Valley Rd-Brockway	18	7	46	Y	Y	W	N	Y	Y	Y	2	10		7		
Gary McCrea	502 North Nickwall Wolf Point,Mt	27	27	50	Y	Y	W	Y	N - Maybe	Y		2					
Dennis D. Murphy	846 McCune Creek Rd. - Circle	18	30	49	N	N	W	Y	Y	Y	Y	3	60				
Charles Noland	304 Buffalo Creek Rd. - Circle	21	20	49	N	Y	B	Y	Y	Y	Y	2	6		4		
Clarence & Donna Lola	707 10th Street - Circle, MT				N	N	W	Y	N			2					
Wayne Pawlowski	896 HC Rd - Circle, MT	20	20	47	Y	Y	W	Y	Y	Y	N	2					
Larry Heser	4223 Hwy 13 - Wolf Point, MT	26	16	48	N	Y	B	N	Y	Y	N	4					
Gene Engen	2506 MT Hwy 13 - Circle, MT	23	7	49	Y	N	W	N	Y	Y	Y	2	3		1		
Warren Willoughby	6 Miles East of Vida	24	19	49	Y	Y	W	Y	N			2	52				
Leo Schillinger	144 Wheatland Rd - Vida, MT	23	5	49	Y	Y	W	Y				2					
Tex J. Gribble	Box 2074 Hwy 528 - Wolf Point	26	16	45	N	N	W	N	Y	Y	Y	3	30		5		
Phil Haglund	136 Spur - Brockway, MT	18	34	45	Y	N	W	Y	Y	Y	Y	2	400				
Oddvar Idland	609 Layman - Circle, MT	19	11	48	N	Y	W	N	Y	Y	Y	3					
Gary Schara	522 Hwy 13 Circle, Mt.	20	18	49	N	Y	W	N	Y	Y	Y	2					
Wes Vine	517 Hwy 201 - Vida, MT	24	2	49	N	Y	W	Y	Y	Y		2	X				
Lloyd Bailey																	Just farmland No House
Lynn D. Casterline	254 Mt Hwy - Vida, MT				Y	Y	W	N	N								
Norma Heser	52 Sunnyside Rd. - Wolf Point	26	15	48		Y	W	Y	Y	Y	Y	1	X				
Cindy Hanks	222 River Road - Wolf Point	27	19	48	N	Y	W	Y	Y	Y		5	75				
Gordon Donohoe	624 South Beery Pine Rd								Y	Y							Wants 2 Hook-ups
Pinacle Ranch (Jay)	1204 Prairie Elk Rd.	23	6	46	N	N	W		Y	Y	Y	3					3 House Hook-ups &
Pinacle Ranch (Bruce)	1202 Prairie Elk Rd.	23	6	46	N	N	W		Y	Y	Y	3					2 Pasture Taps
Wes & Sonja Meissner	72 Spring Creek Rd - Circle	21	10	48	N	N	W	Y	Y	Y	Y	2	300		2		
Wayne Garfield	1402 Mayberry Rd - Circle, MT	19	8	46			W & B	Y	Y	Y	Y	4	300				
Hubbard Ranch, Inc.	1628 34th St. - Missoula, MT	25	31	48	N		W,B,H	N	N								If they lived there they
																	would be interested
Alan and Nancy Stempel	208 Beauty Creek Rd -Brockway	18	34	46	N	Y	W & B	Y	Y	Y	N	3					
Lawrence R. Harris	643 Nickwall Rd - Wolf Point	26	3	49	Y	Y	W & B	Y	Y	Y	N	2					
Elsie Zahn	Box 236 - Circle, MT	19	9	48	Y	Y	W & B	N	Y	N	Y	1	54				

Name	Address	Twnp	Sec	Rge	Quality	Quantity	Source	Treat	Interest	House	Livestock	House No.	Beef	Sheep	Horses	Others	Comments		
Robert S. Olson	726 MT Hwy 201 - Vida, MT	25	24	49	N		W & B	N	Y	Y	N	2	60						
Kelly Nelson	243 L & H Road - Vida, MT	23	11	48	Y	N	W & B	Y	Y	Y	Y	4	10						
Arne Sutton	106 106 Massor St. - Circle, MT	16	6	47	N	N	W & B	N	Y	Y	N	4	0	0	0	0			
Ole & Shirley Rolandson	Box 310 - Circle, MT				Y	Y	W	Y	Y	Y		2							
Jerry Eissinger	605 Lehman - Circle, MT	19	i	48	N	N	W & B	N	Y	Y		2							
Betty Stone	4 Gary Ave. - Glasgow, MT				Y	N	W	N	Y	Y	N	2							
Joe Pilgrim	2068 South Route - Poplar, MT	26	15	50	N	Y	W	Y	Y	Y	Y	2		15					
John Whiteman	111 Royal Ave. - Richey, MT				Y	Y	W	N	N			2	0	0	2		Richey Has Good Water		
Cam or JoAnn Martin	915 MT Hwy 201 - Vida, MT	25	30	50	Y	Y	W	Y	Y	Y		4			2		Meter # 1		
Cam or JoAnn Martin	915 MT Hwy 201 - Vida, MT	25	30	50	Y	Y	W	Y	Y	Y		4			2		Meter # 2		
Kitty Kolden	272 River Road - Wolf Point, MT	27	24	47	Y	Y	W	Y	N			2					Not Affordable		
Jim Beery (Beery Farms)	4 1/2 Mi. E of Hwy 13 on Rd 254	T23N	14	R49E	N	N	W		Y	Y							Quality Water - Spraying		
Jerry & Jeanne Meissner	1 Mile Beauty Valley Road	18	7	46	N	Y	W	N	Y	Y	Y	2				6			
Steve Wanderaas	664 Hwy 201 - Vida, MT	25	23	49	Y	Y	W	N	Y	Y		5					Hydrant for Shop		
Allan Schillinger	133 Wheatland Rd - Vida	T23N	8	R49E	Y	Y	W	Y	Y	Y		2							
Herman Shumway		26	1	48	Y	Y	W	N	Y	Y	Y				12				
Leoia Vanatta	104 Wheatland Rd - Vida, MT	23	6	49	N	N	B	Y	Y	Y		i					Duane Vanatta Farm		
Art & Sandra Loendorf	603 Frontage Rd - Wolf Point	25	25	48	N	Y	Cistren	N	Y	Y	N	2					Not fulltime resident		
John Logan	Box 97 - Brockway, MT	19	28	45	Y	Y	W	N	N			2							
Gene & Barbara Kirchner	605 MT Hwy 200 W - Circle	18	i	47	Y	Y	W	N	N			2	X	X	X	X			
Wallace Hellesvig	453 Rd 254 - Bloomfield, MT				Y	Y	W	Y	N			2							
Jeff Sutton	482 Co. Rd. 518 - Bloomfield				Y	Y	W	Y	N										
Gene Twitchell	1007 Jefferson School Road	16	34	55	N	Y	H & B	N	Y	Y	N	2							
Vicki Vaira	17 Miles North of Richey	26	16	55	N	Y	B	N	Y	Y	Y	3	120		4				
Joe F. Benes	378 Road 431 - Richey, MT	21	28	52	Y	Y	W	N	N	N	N	1	X		X				
Bruce Smith	123 Road 510 - Richey, MT	21	23	54	Y	Y	W	Y	N			5	60						
David Verschoot	HC 87, Box 2212 - Richey, MT	T23N	18	R54E	N	N	W	Y	Y	Y	Y	3	400						
Jeff Verschoot	HC 87, Box 2171 - Richey, MT	23	11	53	N	Y	W	Y	Y	Y	N	2	200						
Larry Smith	418 Road 506 - Richey, MT	21	2	53	Y	Y	W	Y	N			2	30						
Newell Rosaaen	360 Road 617 - Richey, MT	21	10	50	N	Y	W	N	Y	Y	?	4							
Joe Beery	4321 FAS 254 - Richey, MT	22	28	52	N	Y	W	N	Y	Y		4							
James Deckert	3393 FAS 254 - Richey, MT	21	21	53	Y	Y	W	Y	N			2	X	X	X	X	Would Require another		
																	Lift Station on top of Divide		
Donald Lear	5 Mi E & 3 1/2 Mi N Bloomfield	20	26	54	Y	N	W	Y	Y	Y	N	2	0	0	0	0			
Vernon C. Ollermann		19	28	53	Y	N	W	Y	Y	Y		2	50						
Tom & Jeanne Kirkegarrd	88 Horse Creek Rd - Circle, MT	19	9	48	N	N	W	Y	Y	Y		2							
Richard & Carol Scheetz	105 11th Circle				Y	Y	City	N	Y	Y		2							
Kim Murphy	1475 Horse Creek Rd - Circle	20	30	46	N	N	W	Y	Y	Y	N	2	250	200					
Gerald Murphy	1635 Horse Creek Rd - Circle	20	18	46	N	N	W	Y	Y	Y	Y	2	250	200					
Wes & Cheryl Jensen	860 Hwy 200 E Circle, Mt	20	18	50	N	Y	W	Y	Y	Y		4							
Gene Garpestad	105 4th Street - Circle, MT				Y	Y	City	Y	Y	Y	N	2							
LeRoy Richard	923 MT Hwy 201 - Vida, MT	25	30	50	Y & N	N	W	Y	Y	Y	Y	2	90						
Lynn C. Laubach	213 L-N Road - Vida, MT	23	14	48	N	N	B	Y	Y	Y	Y	4							
Circle Vet Clinic	77 Mt. Hwy 13 Circle, MT	19	2	48	N	Y	W	N	Y	Y	Y	4			3 to 4		Vet Clinic Use		
Don & Joyce Schriver	100 Horse Creek Rd - Circle, MT	19	9	48	N	Y	W	N	Y	Y	Y	2			i				
Leonard J. Kuntz	210A Ave. Hwy 200 E - Circle				N	N	W & B	N	Y	Y		2					Car Washer Business		
Dave Kasten	113 Bob Fudge Street Brockway,	17	20	46	N	Y	W	Y	Y	Y	Y	7	500						
Gene Vejtasa	21 Union Road (200 South)	19	21	48	N	N	W	Y	Y	Y		2							
Scott Becker	52 North Road Circle,Mt.	19	10	48	N	Y	W	Y	Y	Y	N	2							
Dennis Wolff	72 Hwy 200 W - Circle, MT	19	16	48	N	Y	W	Y	Y	Y	Y	2	100						
Jim & Rachel Moos	105 Highway 201 Vida, MT	25	26	48	N	N	W & B	N	Y	Y	Y	2	100						
Jim & Rachel Moos	303 Ash Creek Rd - Terry, MT	17	4	47	N	N	W & B	N	Y	Y	Y	3	100						

Name	Address	Twnp	Sec	Rge	Quality	Quantity	Source	Treat	Interest	House	Livestock	House No.	Beef	Sheep	Horses	Others	Comments
Willard Casterline	40.6 Miles North of Circle, MT	26	21	48	N	N	W	Y	Y	Y	Y	2	130		4		
Jarrell Schock	3536 Hwy 13 - Wolf Point, MT	25	24	48	N	Y	W,H,B	N	Y	Y	N	4					
Lewis & June Petrik	942 Sunnyside Road Wolf Point,M	26	12	49	N	N	W & B	N	Y	Y		3					
Kent Larson	200 2nd Street - Circle, MT				Y	N	City	Y	Y	Y		2					
Lonnie & Joanie Pawlowski	903 Horse Creek Rd - Circle, MT	20	29	47	N	N	W & B	N	Y		Y	3	300				How will it effect Ft. Peck
Floyd C. Johnson	P.O. Box 3025 - Wolf Point, MT	T25N	i	R47E	N	Y	B	N	Y	Y	Y	2	150				lake level?
Frank & Cheryl Wright	1794 Hwy 13 - Circle, MT	22	18	49	N	Y	W	Y	Y	Y	Y	5	100	200	2		
David Schumacher	3865 MT Hwy13 Wolf Point, Mt	25	4	48	Y	N	W	Y	Y	Y	Y	2	16				1 Meter or 2 ?
Leonard & Judy Schock	164 Wheatland Rd - Vida, MT	23	5	49	N	Y	W	Y	Y	Y		3					
Fred Hanson	173 Nickwall Road Wolf Point,Mt	26	2	48	N	Y	B	Y	Y	Y	Y	3			4		
Tod Kasten	603 MT 200 E Circle, Mt	20	23	49	Y	Y	W	N	Y	Y	Y	5	200				
Donald Nelson	5 Mi S & 1 Mi W of Vida L-N Rd	23	11	48	Y	N	W	Y	Y	Y	Y	2	3				
Duane & Shirley Nasner	3992 MT Hwy 13 - Wolf Point	26	27	48	N	Y	W & B	Y	Y	Y	N	2					
Albert Nasner	146 Good Road Wolf Point, Mt	26	26	48	Y	Y	W	Y	Y	Y	N	2					
Richard & Joann Heser	4202 MT Hwy 13 - Wolf Point	26	15	48	N	N	W	Y	Y	Y	Maybe	5	100		2		
Larry Schipman	363 Weldon Rd - Circle, MT	20	2	46	Y	Y	W	Y	N			4	120		6		Have good water & lots
Keith & Evelyn Casterline	2891 Hwy 13 - Vida, MT	24	24	48	N	Y	W	Y	Y	Y		2					High output hydrants in
																	special places - Good
Don Richard	51 Cahill Road - Wolf Point, MT	27	25	47	N	Y	W	Y	Y	Y		2					
Vic R. Shefelbine	4145 Hwy 13	26	21	48	Y	N	W	N	Y	Y	N	4					
Howard Gackle	HC 77 Box A-24 - Brockway	16	18	46	N	Y	W,H,B	N	Y	Y	Y	3	150				
Les Toews	4 Mi N of MDU Sta on Hwy 201	26	34	49	Y	Y	W	N	N		Y		100				Only have cows in
																	McCone County
Herb Larson	Miles City, MT																No longer live in area
Dan & Laurie Curtiss	1856 MT Hwy 13 - Circle, MT	22	18	49	N	Y	W & B	N	Y	Y	N	4	6		3		Not convinced yet
Richard Peters	4624 MT Hwy 13 - Wolf Point	27	28	48	Y	Y	W & B	N	N								
Bob & Connie Phalen	444 Road 222 - Lindsay, MT				Y	Y	W & B	Y	N								
Gerald Gibbs	Box 118 Hwy 200 - Jordan, MT	18	17	43	Y	Y	W & B	Y	Y	Y	Y	2	450				
Allen Thiessen	197 2nd St. N.W. - Lambert, MT				Y	Y	City	Y	Y *			2					* If the town hooks up
Roger Williams	3 Miles North of Lambert	23	34	55	N	N	B	Y	Y	Y	Y	2	2		2		
Jon Kvaalen	Co Rd 329 & 2 Mi S of Lambert	22	24	55	N	N	W	Y	Y	Y	Y	6	400 - 500				
Timothy J. Klasna	Corner of Hwy 201 & Co Rd 318	24	i	53	N	N	W	N	Y	Y	Y	4	100				Has 2 households and is
																	interested to hook-up both
Clint Hill	313 3rd Ave. N.W. - Lambert				Y	Y	W	N	N								$50 - $75 Cost to much
Larry Vaira	HC 84 Box 21-D - Lambert, MT	24	6	55	N	Y	W	Y	Y	Y	Y	2					
William C. Ulrickson	26 1st St. West - Lambert, MT				N	Y	B	N	Y	Y	N/A	2					
Kelly Vaira	HCR 84 Box 21A - Lambert	24	21	54	N	Y	W	N	Y	Y	Y	5	X	X	X		
Donald Ligon	2nd St. & 2nd Ave. - Lambert				Y	Y	W	Y	Y	Y		2					
Brian Ligon	141 3rd St. West - Lambert, MT				N	N	W	Y	Y	Y	Y	2			1		
Jerry Schillinger	1400 F Ave. - Circle, MT				Y	Y	B	N	Y	Y	N	5					
Lillian O'Connor	Jordan, Mt.				N	Y	B	N	Y	Y	N	i					
Tylene & Shane Eaton	8 Rd 224 - Lindsay, MT				Y	Y	W	Y	N								
Larry Switzer	776 Road 617 - Richey, MT				Y	Y	W	N	Y	Y	Y	5	200 - 400				
Gene Moos	3 Miles East of Brockway	18	25	47					Y								
Ron Fink		24	1	55	Y	Y	W	N	N			4					Not at this time.
Christina Vanslow																	Use no water on property
Dennis Dahl	591 Mendenhall - Wolf Point	26	27	46	Y	Y	W	N	Y		Y	5	30		5		Will there be a start-up
																	fee every year?
Martha A. Hance	53 North Road - Circle, MT	19	9	48	N	N	W	Y	Y	Y	Y	2		20	9		
Larry Cheryl Wilken	332 Rd 515 - Blomfield, MT	20	6	54	N	N	W	N	Y	Y	N	2					
McCone Electric Coop	110 Main Street				N	Y	B	N	Y								Business Use
Kenny & Regan Kirchner	283 MT Hwy 200 West Circle	19	21	48	N	N	W & B	N	Y	Y	Y	3	80	160			

Name	Address	Twnp	Sec	Rge	Quality	Quantity	Source	Treat	Interest	House	Livestock	House No.	Beef	Sheep	Horses	Others	Comments
Joyce J. Petrik	942 Sunny Side Road Wolf Point	26	12	49	N	N	W,H,B	N	Y	Y		1					
Massar Ranch, Inc.	343 Horse Creek Rd - Circle	19	6	48	N	Y	W	Y	Y	Y	Y	10	890				We need 7 Hook-ups 2
Massar Ranch, Inc.	59 North Road Circle	19	9	48							Y						for House 5 for Livestock
Massar Ranch, Inc.	PASTURE TAP	20	35	48							Y						
Massar Ranch, Inc.	PASTURE TAP	19	19	49							Y						
Massar Ranch, Inc.	PASTURE TAP	19	29	49							Y						
Massar Ranch, Inc.	PASTURE TAP	17	2	49							Y						
Massar Ranch, Inc.	PASTURE TAP	17	9	49							Y						
Williston Basin Interstate	593 MT Hwy 201 - Vida, MT	25	27	49	N	Y	W & B	N	Y	Y	N	2 +/-					Business
Wayne A. Kleppelid	city				N	Y	W	Y	Y	Y	N	2					
Donald Kleppelid	803 11th St. - Circle, MT				Y	Y	City		Y	Y	N	2					Need Additional Info
Taw Eissinger	161 Spur Road Brockway	18	34	45	N	Y	W	N	Y	Y	Y	1	300				
Everett Williams	6 Mi N of Hwy 200 on Co Rd 328	23	3	55	N	N	W	Y	Y	Y	Y	2	20				
Nels & Patricia Boe	401 Ave. C - Circle, MT				Y	Y	City	N	Y	Y	N	2					Water is only good after
																	being processed thru
																	City water plant
McDonald Living Trust %Bob	P.O. Box 182, Circle, MT	17	7	46	N	Y	City	N	Y	Y	Y	?	20				
Roger & Connie Eissineer	181 Spur Road Brockway	18	34	45	N	N	W & B	Y	Y	Y	Y	2	300				
Hay Creek, Inc -% Langemo	603 Watkins Rd. Brockway	17	18	46	N	N	W	N	Y	Y	Y	2	200 +				
Langemo Inc.	831 Last Chance Rd. Brockway	17	31	45													
Matt & Krista Beery	503 MT Hwy 254 - Vida, MT	23	24	49	N	Y	W & B	N	N								
Roger W. Meyer	Lambert	22	2	55	N	N	H & B	Y	Y	Y	Y	2					Let me know if I can help
Alex Boysun	4471 MT Hwy 13 - Wolf Point	26	4	48	N	N	H & B	N	Y	Y	Y	4			1		Probably - Undecided
Marvin Strand	962 Cow Creek - Duck Creek Rd	22	3	47	N	Y	W & B	N	Y	Y	Y	?					
Neil & Ellen Jensen	861 MT Hwy 200 East Circle	20	18	50	N	Y	W	N	Y	Y		5					
Les Olson	3124 Hwy 13 - Vida, MT	24	7	49	N	N	W	N	Y	Y	Y	1	25				
Laurine Schmidt	505 Skull Creek Rd. Brockway	17	30	45	N	Y	W	N	Y		Y	2					2 Houses on Land
Roscoe Schmidt	507 Skull Creek Rd. Brockway	17	30	45	N	Y	W		Y	Y		1					
Dale Rosaaen	Lambert	T24	24	R53E	Y	Y	W	Y	Y	Y	Y	2	500				
Stan Robbins	766 hwy. 200W Circle	T18	10	R47E	N	Y	W	N	Y	Y	Y	2					
Darrell Garoutte	1872 Prairie Elk Rd Wolf Point	T23N	29	R46E	N	Y	W&B	N	Y	Y	Y	3	800		40		
John Urton	365 Ball Park Rd. Vida	T24N	34	R49E	N	N	W		Y	Y	Y	4					
John Murphy	1775 Mayberry Rd. Circle,Mt	T19N	14	R45E	N	N	W	Y	Y	Y	Y	2	250				
Prairie Elk Colony	1436 hwy. 528	26	8	46					Y	Y							2 hookups
Prairie Elk Colony	1436 hwy. 528	26	8	46					Y	Y							
Ray Jansen	4333 Hwy. 13	26	9	48					Y	Y	maybe						
Dawn Anderson	3rd & Main Street Brockway								N	N							Don't live there year around
Erna Haber	284 Beauty Valley Rd. Brockway	19	32	46	N	N	W	Y	Y	Y	N	2					
Debbie Jensen	Hwy. 13 Wolf Point	26	10	48	N		W		Y	Y	N						
Don Huber	425 River Rd Wolf Point	27	26	47	N	N	W		Y	Y	N	2					
Don Bogar	East Vida Rd. Vida	24	20	49	Y	Y	W	Y	Y	Y	N	3					
Larry Nagel	Union Road Circle,Mt (pasture tap)				N	N			Y		Y						
Larry Haber	454 hwy.200E	20	28	49	N	N	W&B	N	Y	Y	Y	2	350		10		
Rex Silkveland	803 Hwy. 13	20	1	48			W		Y	Y		4					
Buck Vanhorn	751 Rd. 422 Circle	19	10	51	N	Y	W	Y	Y	Y	Y	4	280	20			
Alvin Waller	Circle	20	14,15	45	N	N			Y		Y						Improve land No water there
Dale Heide	Circle (dawson Co.)	20	30	51	Y	Y	W	N	Y	Y	Y	2					
Arnold Waller	Circle				Y	Y	N/A		Y	Y	Y						Improve land
Jim Wolff	Circle	19	25	49	N	Y	W	Y	Y	Y	Y	2	100			spraying	crop spraying
Becker-Zahn Inc	Circle	19	10	47	N		W	Y	Y	Y	Y	2					2 hookups
Jeff Moos	Brockway	18	25	47	N	Y	B	Y	Y	Y	Y	3	75				
Jason Beery	Brockway	16	14	46	N	Y	B	Y	Y	Y	Y	3	200			SPRAYING	

Name	Address	Twnp	Sec	Rge	Quality	Quantity	Source	Treat	Interest	House	Livestock	House No.	Beef	Sheep	Horses	Others	Comments
George Mahlstedt	Circle	19	12	50	N	Y	W	Y	Y	Y	Y	2	275	20	30		
George Mahlstedt (pasture ta	Circle	19	8	51													
Robert Wolff	Brockway	16	20	46	N	Y	W	N	Y	Y	Y	2	50				
Mary Wangen Inc	Brockway	18	4	46	N	Y	W	N	Y	Y	Y						
Todd Whitney	Circle	19	21	48	N	Y	W	Y	Y	Y		2					
Micheal Thoney	Brockway	17	16	46	N	Y	W/B	Y	Y	Y	Y	2	120			SPRAYING	
Micheal Thoney	Brockway	17	15	46					Y		Y						
Micheal Thoney	Brockway	17	21	46					Y		Y						
Micheal Thoney	Brockway	17	24	45					Y		Y						
Duane Mury	Circle	19	22	48	N	Y	W/B	N	Y	Y	N	2					
Dale Mullin	Lambert ,Mt.				y	y	w	n	y	y	y	2	100				
Dave Gibbs	Cirlce, Mt	22	33	46	N	Y	W	Y	Y	Y	Y	5					
Dave Gibbs, (pasture tap	Circle	23	15	44	n	n	n	n	y		y		800				
Wayne Hinnaland	Brockway, Mt.	18	9	45	N	N	W	Y	Y	Y		4				garden lawn trees	
Milton, Rosseland	Circle	20	26	46	n	y	w	y	y	y	n	2					
Windancer Farms	Miles City (Jordan)																
Janitell Bros.	Miles City (Jordan)																
Russell Cutriss	Circle	22	5	45	N	N	W/B/H	Y	Y	Y	Y	3	60	200	6		
Leo Kahm	Circle	22	12	48	N	Y	W	Y	Y	Y		3					
Doug Dubin	Brockway	18	20	47	N	N	W	N	Y	Y	N	5					
Bill Steele	Circle	19	2	48	Y	N	W	N	Y	Y	N	2					
Faye Speer	Circle	19	17	48	N	Y	W/B	Y	Y	Y	Y	3			2	garde/lawn	
Hilstad Ranch Inc.	Circle	18	2	48	N	Y	W	Y	Y	Y	Y	3-Feb	60				INTERESTED IF AFFORABLE FOR LIVESTOCK
Dave McCloy	pasture tap	18	22	48	N	N			Y		Y						interested if afforable
Dave McCloy	pasture tap	18	24	48					Y		Y						interested if afforable
Dave McCloy	Circle	18	26	48	N	Y	W		Y			2	70	500			interested if afforable
Harold Moos	Brockway	18	25	47					y	y	y	2					
Jeff Moos	Brockway	18	17	47	N	Y			Y	Y	Y	2					
Fred Hanson	Wolf Point	26	2	48	N	Y	W/B	Y	Y	Y	Y	3			4		GARDEN
Ken Simonson	Sidney	24	1	56						Y	Y						HOUSE/LIVESTOCK TAP
Chuck Geer	Vida	22	8	49						y	y	2					HOUSE/LIVESTOCK TAP
Pasture	Vida	22	17	49							y						
Pasture	Vida	22	17-20	49							y						
Pasture	Vida	22	20	49							y						
Leonard Strand	Lambert	25	27	54						y							
John Geer	Vida	24	27	48						y							
Becky Daniels	Sidney	24	5	57						y		2					
Arnold Boysun	Wolf Point	24	22	47						y	y						
" "	Wolf Point	24	23	47						y	y						
Dale Heide Pasture	Circle	18	20	48							y						
Pasture	Circle	18	9	48							y						
Lone Pine Ranch	Vida	24	29	47						y							
Harold Moos	Brockway	17	5	47							y						
Daniel DeWitt	Wolf Point	27	28	48						y	y						
Jim Mullin	Lambert	23	30	55						y							Think 2 households
" "	Lambert	23	30	55						y							
Dick Renken	Vida	25	3	49						y							
Wayne Klepplid	Circle	21	23	45						y							
Phil Reinemer	Circle	20	26	47						y	y						
Lawrence Harris	Wolf Point	26	3	49						y							
Pasture Don Quick	circle	19	10	48							y						outside city limits no city water
Pasture	Circle	19	10	48							y						outside city limits no city water

Name	Address	Twnp	Sec	Rge	Quality	Quantity	Source	Treat	Interest	House	Livestock	House No.	Beef	Sheep	Horses	Others	Comments	
Pasture	Circle	19	15	48							y						outside city limits no city water	

September 6 2005																			
Bogar, Do	147 E Vida	McCone	25	34	48	n	n			Y	Y								
Bogar, Do	Vida	McCone	23	15 or 13	49	N	N			Y	Y								
Carpenter,	Wolf Point	McCone	24	21	47	N	N			Y	Y	N							
Guttenburg	HCR 271	McCone	25	3	42	N	N	W & H	N	Y	Y								
Guttenburg	HCR 271	McCone	25	10	42	N	N			Y	Y								
Haynie, Jo	Circle, Mt	McCone	21	29	47	N	N	W		Y	Y	Y							
Johnson, J	33188 CR	Richland	24	17	56					Y	Y								
Kirkegard,	Circle, Mt	Dawson	20	30	50	N	N	W		Y		Y							
Merry, Ken	Circle, Mt	McCone	19	16	48	N		W		Y	Y								
Smallis, Je	274 XIT R	McCone	17	36	48					Y	N	Y						This is a State School Section.	
Smallis, Je	Pasture Ta	Prairie	15	i	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	2	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	12	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	11	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	13	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	14	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	24	46					Y		Y							
Smallis, Je	Pasture Ta	Prairie	15	23	46					Y		Y							
Taylor, Be	Wolf Point	McCone	23	6	46	N	N	W		Y	Y	Y	2						
Torgenson	Box 132 L	Richland	23	33	55					Y	Y								
Ward Jim	Townsend	McCone	23	17	45	N	N			Y	N	Y							
Ward Jim	Townsend	McCOne	26	17	45	N	N			Y	N	Y							
Yates, Sam		McCone	23	19	49	N	N	N		Y	Y								
New Hook-up 2/22/06																			
Beery, Da	P.O. Box 2	Dawson	21	10	50					Y									
Beery, Da	P.O. Box 2	Dawson	21	18	50					Y									
Beery, Da	P.O. Box 2	Dawson	21	11	50					Y									
Beery, Da	P.O. Box 2	Dawson	21	2	50					Y									
Fisher, Eu	HC 63 Box	Richland	26	27	52					Y	Y	Y						Combination with barn	
Fisher, Eu	Pasture Ta	Richland	26	33	52					Y	N	Y							
Haglund, P	136 Spur R	McCone	18	28, 20	44							Y							
Haglund, P	136 Spur R	McCone	18	4	45							Y							
Haglund, P	136 Spur R	McCone	17	12	44							Y							
Johnson, J	33188 CR	Richland	24	17	89					Y			Y						
Schillinger,	Circle, Mo	McCone	20	12	48	N	N			Y	Y								
Schillinger,	Circle, Mo	McCone	23	16	49	N	N			Y	Y								
Schillinger,	Circle, Mo	McCone	24	9	49	N	N			Y	Y								
Thiessen,	RR 2 Box	Richland	21	11	55					Y	N	Y							
Torgerson,	Box 132 L	Richland	23	33	55					Y			Y						
Waller, Le	1915 Hors	McCone	20	22	45					Y	Y								
Waller, Le	Pasture Ta	McCone	20	11	45					Y		Y							
Wolff, Jim	846 Hwy 2	McCone	18	34	50						Y								
New Hook-up 3/2/06																			
Bar JV An	14043 Cnt	Richland	?	?	?					Y									
Buechler,	PO Box 71	Dawson	23	23	49					Y	Y								
Buechler,	Rock Cree	McCone								Y	Y								

Cavanaugh	1052 14th	Richland	?	?	?					Y									
Clay Butte	Marco Unr	Dawson	21N	6	53E					Y	Y								
CP Livesto	HC 60 Box	Garfield	21N	4	33E					Y	Y	Y						House and Pasture	
Fogle, Ken	HC 62 Box	Garfield	19	8	39					Y									
Fogle, Ken	HC 62 Box	Garfield	20	33	39					Y									
Fogle, Ken	Pasture ta	Garfield	19	23	39					Y		Y							
Fogle, Ken	Pasture ta	Garfield	18	35	39					Y		Y							
Frideres, D	2128 Gree	Richland	26	19	57					Y									
Frideres, D	2128 Gree	Richland	26	24	56					Y									
Garpestad	P.O. Box 2	McCone	20	27	49					Y									
Garpestad	Pasture Ta	McCone	20	35	49					Y									
Gossen Fa	P.O. Box 6	Dawson	20	12	52					Y	Y	Y							
Guttenberg	HCR 271-1	McCone	25	3	42					Y	Y								
Guttenberg	HCR 271-1	McCone	25	10	42					Y	Y								
Haynie, Ell	Box 36 Vi	McCone	24	17	49					Y	Y								
Haynie, Ell	Box 36 Vi	McCone	21	21	48					Y	Y								
Haynie, Jo	602 Main	McCone	29	21	47					Y	Y	Y							
Hinnaland,	Box 31 Cir	McCone	18N	17	45E					Y	Y							Household on Soda Creek Inc. land	
Hungry Ac	HCR 84 B	Richland	?	?	?														
Hunter, Ja	13988 Cnt	Richland	?	?	?					Y									
IOU Ranch	HC 68 Box	Garfield	18N	36	33E					Y	Y	Y						House and Pasture	
IOU Ranch	HC 68 Box	Garfield	18N	31	32E					Y	Y	Y						House and Pasture	
IOU Ranch	Pasture Ta	Garfield	19N	5	33E					Y		Y							
IOU Ranch	Pasture Ta	Garfield	18N	29	33E					Y		Y							
IOU Ranch	Pasture Ta	Garfield	18N	35	33E					Y		Y							
Irigoin Prtn	13741 Cnt	Richland	25	30	54					Y	Y	Y							
Irigoin Prtn	Pasture Ta	Richland	25	19	54					Y		Y							
Irigoin Prtn	Pasture Ta	Richland	26	29	54					Y		Y							
Irigoin Prtn	Pasture Ta	Richland	25	13	53					Y		Y							
James Sch	Box 409 B	McCone	23	25	47SW					Y	Y								
Jansen, Ra	Pasture Ta	McCone	26	10	48					Y	Y								
Jensen, Ra	Pasture Ta	McCone	26	9	48					Y		Y						Tank and hydrant 3/4 mile w of hwy 13	
Johnson, J	33188 CR	Richland	24	17	56					Y	Y								
Kasten, Da	Pasture Ta	Prairie	16	21	48					Y		Y							
Kirchner B	Pasture ta	McCone	19	20	48					Y		Y							
Kirchner B	607 Hwy 2	McCone	18	1	47					Y	Y	Y						2 Households and Pasture tap	
Kirchner B	Pasture Ta	McCone	19	36	47					Y	N	Y						State Section	
Larson, Th	1735 Shas	McCone	18N	32	47E					Y	Y								
Larson, Th	Pasture Ta	McCone	18	29	47E					Y		Y							
Larson, Th	Pasture Ta	McCone	18	28	47E					Y		Y							
Larson, Th	Pasture Ta	McCone	18	33	47E					Y		Y							
Merry, Ken	Circle, MT	McCone	19	16	48					Y	Y								
Miller, Eric	Box 297 J	Garfield	19N	6	37E					Y	Y								
Moos, Don	Box 148 C	McCone	20	24	46					Y	Y								
Phipps, Tir	HC 60 Box	Garfield	19N	9	32E					Y	Y								
Phipps, Tir	Pasture Ta	Garfield	19N	1	33E					Y		Y							
Pluhar, Ve	Box 324 C	Garfield	16N	1	40E					Y	Y	Y						House and Pasture	
Pluhar, Ve	Box 324 C	Garfield	16N	7	41E					Y		Y							
Pluhar, Ve	Box 324 C	Garfield	16N	11	40E					Y		Y							
Pluhar, Wa	Cohagen,	Garfield	16N	17	41E					Y	Y	Y							
Ruffato, Au	14541 CR	Richland	26	13	52E					Y	Y								
Shannon, I	RR 2 Box	Richland	21	2	59					Y	Y	N							

Shannon,	Pasture Ta	Richland	26	35	59					Y	N	Y							
Smokey Ri	Bonnie Be	Richland	26	8	59					Y	?	?							
Smokey Ri	Bonnie Be	Richland	26	21	59					Y	?	?							
Sullivan, J	103 Rd 43	Dawson	20	3	52					Y	Y								
Sunny Slo	Pasture Ta	Richland	23	9	56					Y	Y	Y							
Vaira, Colli	HC 21 Box	Richland	24N	1	54E					Y	Y								
Vaira, Colli	Pasture Ta	Richland	24N	3	53E					Y		Y						Would like to add more in future.	
Vaira, Colli	Pasture Ta	Richland	24N	28	54E					Y		Y							
Vaira, Kell	Pasture Ta	Richland	24	28	54					Y		Y							
Vaira, Kell	Pasture Ta	Richland	24	3	54					Y		Y							
Vaira, Kell	Pasture Ta	Richland	24	4	53					Y		Y							
Vaira, Kell	Pasture Ta	Richland	24	9	53					Y		Y							
Vaira, Paul	Pasture Ta	Richland	23	10	55					Y		Y							
Vaira, Paul	Pasture Ta	Richland	24	24	54					Y		Y						In the fall.	
Verschoot,	31091 Cnty	Richland	23N	23	52E					Y	Y								
Waite, Bill	713 RD 53	Dawson	18N	10	55					Y	Y								
Waller, Alv	1010 H Av	McCone	20	14	45					Y	Y								
Ward, Jam	85 Cactus	McCone	17	23	45					Y	?	Y							
Ward, Jam	85 Cactus	McCone	17	26	45					Y	?	Y							
Zuroff, Kat	P.O. Box 2	Dawson	21	23	52					Y									

Appendix E

Public Involvement

Newspaper Articles

Public Meeting Rosters

Information Meeting / Environmental Presentation

: Banner • Circle, MT • Thursday, November 20, 2003

Dry- Redwater...
Water, do you have what you need?

What is the Dry-Redwater Rural Water System?

Water, do you have what you need? The cost of hauling and buying water for household and livestock use can be high and time consuming. We all need good quality and quantity of water to maintain our businesses, communities, health and well being.

A number of people, like the communities of Jordan and Circle, know what it is like to not have good quality and quantity of water. Many of our rural neighbors must haul all of their household water. The town of Circle is concerned that the new well just completed is only a short term patch and that they need a better solution.

A potential long term solution for all our communities is being proposed for our consideration. It is called the DRY-REDWATER Rural Water System? Everyone is encouraged to attend a community meeting to find out more.

This water system will be designed to provide a good quality and quantity of water to as much of the **Communities of Garfield and McCone Counties as possible, including, but not limited to Jordan, Circle, Vida, Richey, Lambert, and their surrounding areas**

The water is to be used in residential, commercial, ranch households and livestock watering systems These types of systems are very possible. There are many rural water systems of this kind designed and operating now in our neighboring states due to poor water conditions such as ours. Federal and State Governments currently pay for the majority of the cost of these systems for a large portion of the US population

The first step is to determine who all is interested in at least finding out the feasibility of the system and what the costs might be. **This effort is being supported by the Town of Jordan, Town of Circle, Garfield County, Garfield County Conservation District, McCone County, McCone Conservation District, and numerous individuals of Garfield and McCone counties.**

There is no need for complete commitment to the project at this time. However, it is very important to determine who is potentially interested. This show of interest is vital to help determine the amount of water that must be supplied, the size of the delivery system, the size of the water treatment system, and many other considerations. It is critical to be able to properly size the system, the option to try to become involved after the system coverage area and size is determine will be very difficult. So, please let us know if you are interested

There is a survey being prepared to be delivered to all of the residents to help us in determining interest in the system and the feasibility effort. Much like the telephone and electric cooperatives, we can have an affordable cooperative water system that will provide good quality and quantity water to our communities and neighbors.

Please attend the Community Meetings or call the Garfield County Conservation District at 557-2740 Ext. 100 or the McCone Conservation District at 485-2744 Ext. 190.

The Dry-Redwater Rural Water System Community meetings are tentatively set for:

-Thursday December 4, 2003 at the Jordan Courthouse.

-Thursday December 11, 2003 at the Circle High School.

-Monday December 15, 2003 at the Vida School.

Got News?
Call 1-406-433-3306
or email to:
roundup@esidney com

Dry-Redwater Rural Water System Explained

By Tod Kasten

The Dry-Redwater Rural Water System steering committee has held community meetings to provide the public with preliminary information regarding the proposed system. Meetings in Jordan, Circle, Vida, Elmdale and Lambert had good turnouts with about 150 community residents attending. The need for better and more water for many in our communities is evident.

What is the Dry-Redwater Rural Water System? It is a potential long-term solution to provide good quality and quantity of household and livestock water to the area. The proposed area includes as many of the residents and towns in McCone and Garfield Counties, plus the areas surrounding Richey and Lambert, as possible. The system would consist of a pipeline network with the water intake pipe located somewhere in the Missouri River. From the intake point the water, treated as per state and federal guidelines would pass through a standard sand filtration treatment plant, then get pumped through a network of underground water lines to the users. The lines would utilize utility or county road right-of-ways where possible. A network of pumping stations and storage tanks would insure reliability and flexibility to the system

The system would provide water for residential commercial, ranch households and livestock watering systems Many of these rural water systems exist in neighboring states. Financially they are feasible because the federal and state governments have always used tax money to help pay for the majority of the costs of these water systems for most of the US population

The rural water system copies the cooperative efforts that brought telephone and electricity to rural America. Almost all of North Dakota and South Dakota are served by rural water systems. After the Circle meeting, an area resident commented, "I am sure that when a group of people sat down at the table some years ago to discuss how to get electricity and telephone to the rural areas, they had the same questions and concerns we heard at the meeting today. Well, look at where we are now. Through a cooperative effort, electrical and telephone service became feasible We need to look at this rural water project in the same way, as a utility'

There are many potential benefits of a rural water system that will help our communities. These include an improved quality of life associated with high quality safe drinking water, fire protection, and backup use for livestock in case of well failure. As well the system could enhance spray use, increase the resale value of the user's property and improve the potential for economic and community development

The first steps in developing a system are to provide basic information to as many people as possible and then determine who is interested After the initial public meetings we plan to conduct a telephone survey of all of the county residents to determine who is interested in participating. The towns of Circle Jordan and Lambert have indicated that they are interested in participating If the project has sufficient interest, then a feasibility study of the system and its costs will be completed

The purpose of the survey will be to determine the amount of water that must be supplied and where users live. The information from the survey will be used by the engineers to determine the size of the delivery system, the size of the water treatment system and other considerations. It is critical to properly size and thus determine an accurate cost of the system. It is also very important to let us know if you are interested so that we are able to properly size the system at the start, because opting to join in after the system coverage area and size is determined will be difficult. So, please let us know if you are interested.

Only after the feasibility study is completed will we have an accurate estimate of the potential costs of the system. Typically these systems have a total cost for a typical household (use of 6,000 gallons per month) of between \$50 and \$75 per month. This monthly charge consists of a minimum monthly fee of between \$25 and \$35 and a water use charge of between \$2 to \$5 per 1 000 gallons of water.

Cost of the feasibility study will not known until we have the results of the survey

We are asking everyone interested to donate \$25 per potential hookup/meter, to help pay for the feasibility study. The State of Montana has already provided \$30 000 to help cover the cost of the study. If you help with a donation to the feasibility study, you will have the option to hook up to the system at a discounted cost The donation is tax deductible Checks should be made to "Great Northern Development" for the DRW system. If there is not sufficient interest to do a feasibility study, the donations will be returned.

Donations can be given to your local conservation district office.

This effort is being supported to date by the Town of Jordan, Circle and Lambert Garfield County, Garfield, McCone, Richland and Dawson Conservation Districts, and numerous individuals Your careful consideration is appreciated Together we can help bring good quality and quantity of water to our neighbors and communities that do not have it.

If you have any questions, you can contact Tod Kasten at 406-485-3374, McCone Conservation District at 406-485-2744, or Garfield Conservation District at 406-557-2232.

504-80

THE CIRCLE BANNER • Circle, MT • Thursday, June 24, 2004

Dry-Redwater study to begin soon

Dry-Redwater has contracted with Interstate Engineering for rural water study.

The Dry-Redwater Rural Water steering committee and the McCone and Garfield Conservation Districts entered into a contract with Interstate Engineering out of Sidney, Montana to do an in-depth study of the coverage area and costs of a rural water system. The proposed water system will provide safe and reliable water for general household use and livestock watering.

The first part of the two part contract is the feasibility portion. This feasibility study will cover topics like: where the water can be piped; what is the best source of water; how will it be piped; and how much it will cost to build and maintain the system.

With this information the communities and individuals involved will be able to make an educated decision as to whether they want to be a part of the project.

The study will begin in the next couple of weeks. The results of the feasibility portion will be available this November. The first step is to review and analyze all of the surveys that have been returned. The study area includes all of Garfield and McCone Counties and portions of Dawson, Prairie and Richland Counties. The towns and areas surrounding Circle, Vida, Sandsprings, Richey, Lambert and Bloomfield, to name a few of the towns, are included.

If you have any interest at all in this effort or if you have any questions we encourage you to contact: Tod Kasten 485-3374, McCone Conservation District 485-2744 or the Garfield Conservation District 557-2232.

THE CIRCLE BANNER • Circle, MT • Thursday, July 15, 2004

504-80

Dry Redwater receives grant

McCone County to Receive Funding for Economic Development Planning

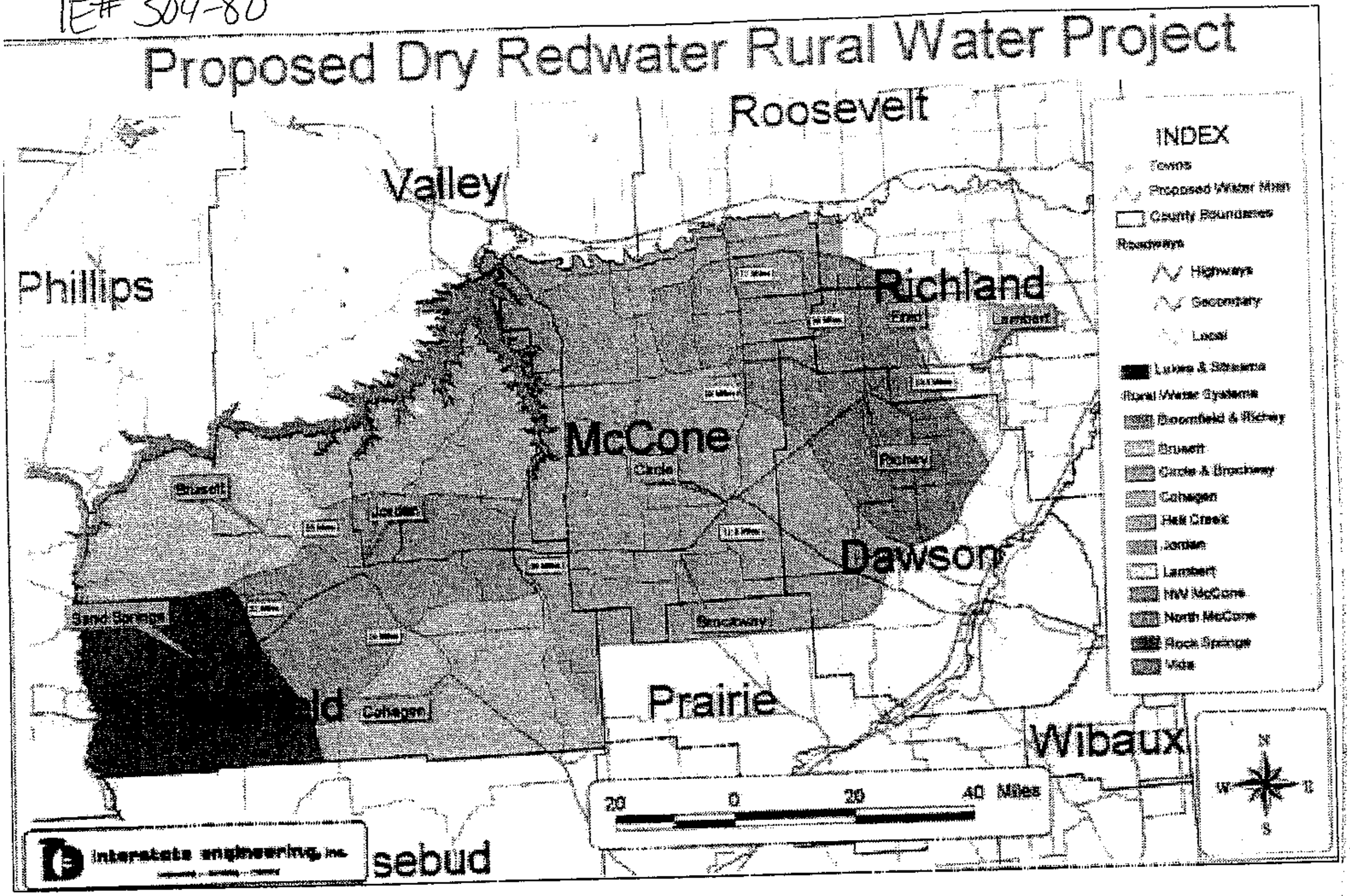
McCone County has been awarded $15,000 in economic development planning grant funds by the Montana Department of Commerce through the Community Development Block Grant – Economic Development Program

The County will use $15,000 of economic development funds to conduct an engineering feasibility study and preliminary engineering report for the Dry-Redwater Rural Water System. "This regional water system would bring needed water quality and quantity to parts of Garfield, McCone, Richland, and Dawson counties which would provide a needed basis for economic growth," said Mark Simonich, Director, Montana Department of Commerce.

The Community Development Block Grant Program is funded by the U.S. Department of Housing and Urban Development. Additional funding for this project will be provided through the Montana Department of Natural Resources and Conservation, McCone County, and the Great Northern Development Corporation.

Sidney Herald
WEDNESDAY, AUG 11, 2004

IE# 504-80



The Dry Redwater Rural Water feasibility study includes the towns of Circle, Jordan, Richey and Lambert.

Dry Redwater Rural Water feasibility study under way

Interstate Engineering Inc has been contracted to do the feasibility study for the Dry Redwater Rural Water Project.

The study will be done in two phases. The first phase will address potential users, identify possible water sources, water line routes, and the projected costs to build and operate the system

The study will include McCone and Garfield counties and western edges of Richland and Dawson counties, including the towns of Circle, Jordan. Richey and Lambert.

It's important that if residents are interested in having good quality water to let officials know.

There has been comments that if the project goes through, people would be interested in hookups for pastures, farm houses and cabins Officials need to know where these hookups are before the water line routes are laid out so the water needs can be included in the feasibility study.

The Dry Redwater Rural Water Project is asking for a one-time donation to help pay for the feasibility study.

There is no commitment to hook up at this time. Those individuals and towns that help with a donation now will be offered to hook up to the water district at a reduced rate, if the project goes to that point.

So far, officials have raised about $50,000 from grants and individual donations.

Here are a few of the potential benefits from good quality water:

- Reduction of costs associated with water; do not need to maintain a well, water treatment, water softener, or to haul water.
- Allows backup for livestock, in the event a well would fail
- Increased weight gain in calves.
- Increased resale of users property.
- Spray use, fewer plugged nozzles, and potential reduction in chemical costs as a result of increased spray efficiency.
- Hydrants at pumping stations for water refill for fire fighting.
- Household savings in cleaning supplies, laundry and more ease of cleaning in general.

If you have any questions, call the McCone Conservation District at 485-2744, ext. 100, Garfield Conservation District at 557-2232, Richland Conservation District at 433-2103, ext. 101, Dawson Conservation District at 377-5566, ext. 101, or Tod Kasten at 485-3374.

Roundup
Aug 11, 2004
IE #S04-80 W

Dry-Redwater Rural Water Feasibility Study Underway

Interstate Engineering Inc. has been contracted to do the feasibility study for the Dry-Redwater Water Project.

The study will be done in two phases. The first phase will address potential users, identify possible water sources, water line routes, and the projected costs to build and operate the system.

The study will include McCone and Garfield Counties and the western edges of Richland and Dawson Counties, including the towns of Circle, Jordan, Richey and Lambert.

There have been comments that if the project goes through, people would be interested in hookups for pastures, farmhouses, and cabins. However, we need know where these hookups will be located before the water line routes are laid out. Therefore, it is important that people who are even slightly interested in having GOOD quality water let us know immediately so we can incorporate this information on water needs into the feasibility study. The Dry-Redwater Water Project is asking for a one-time donation to help pay for the feasibility study. So far we have raised about $50,000 from grants and individual donations. There is no commitment to hook up at this time. If the project proceeds to the water delivery stage, those individuals and towns that help with a donation at this time will be offered a hook up to the water district at a reduced rate.

Good quality water provides recipients with benefits. A few of these benefits include:

- Reduction of costs associated with water, as people do not need to maintain a well, perform water treatments, or haul water, and they can also discontinue using a water softener.
- Backup for livestock, in the event a well fail
- Increased weight gain in calves
- Increased resale value of property
- Spray use, fewer plugged nozzles, potential reduction in chemical costs as a result of increased spray efficiency
- Hydrants at pumping stations for water refill for fire fighting
- Household savings in cleaning supplies and laundry and more ease of cleaning in general.

If you are interested in having GOOD quality water, we encourage you to mail in your survey. If you have any questions call the McCone Conservation District at 485-2744 ext. 100; Garfield Conservation District at 557-2232; Richland Conservation District 433-2103 ext. 101; Dawson Conservation District 377-5566 ext 101; or Tod Kasten at 485-3374.

Feasibility study underway

The Dry-Redwater Rural Water Feasibility Study is underway.

Interstate Engineering Inc. has been contracted to do the feasibility study for the Dry-Redwater Water Project.

The study will be done in two phases. The first phase will address potential users, identify possible water sources , water line routes and the projected costs to build and operate the system.

The study will include McCone and Garfield Counties and western edges of Richland and Dawson Counties, including the towns of Circle, Jordan, Richey and Lambert.

It is important that if you are interested at all in having GOOD Quality water, please let us know.

There has been comments, that if the project goes thru , people would be interested in hookups for pastures, farm houses, and cabins. We need know where these hookups are before the water line routes are laid out and so that your water needs can be included in the feasibility study.

The Dry-Redwater Water Project is asking for a one time donation to help pay for the feasibility study.

There is no commitment to hook up at this time. Those individuals and towns that help with a donation at this time will be offered to hook up to the water district at a reduced rate, if the project goes to that point.

So far we have raised about $50,000.00 from grants and individual donations .

Just to name a few of the potential benefits from Good Quality water:

- Reduction of costs associated with water, do not need to maintain a well, water treatment, discontinuing water softener, haul water.
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- Increased weight gain in calves.
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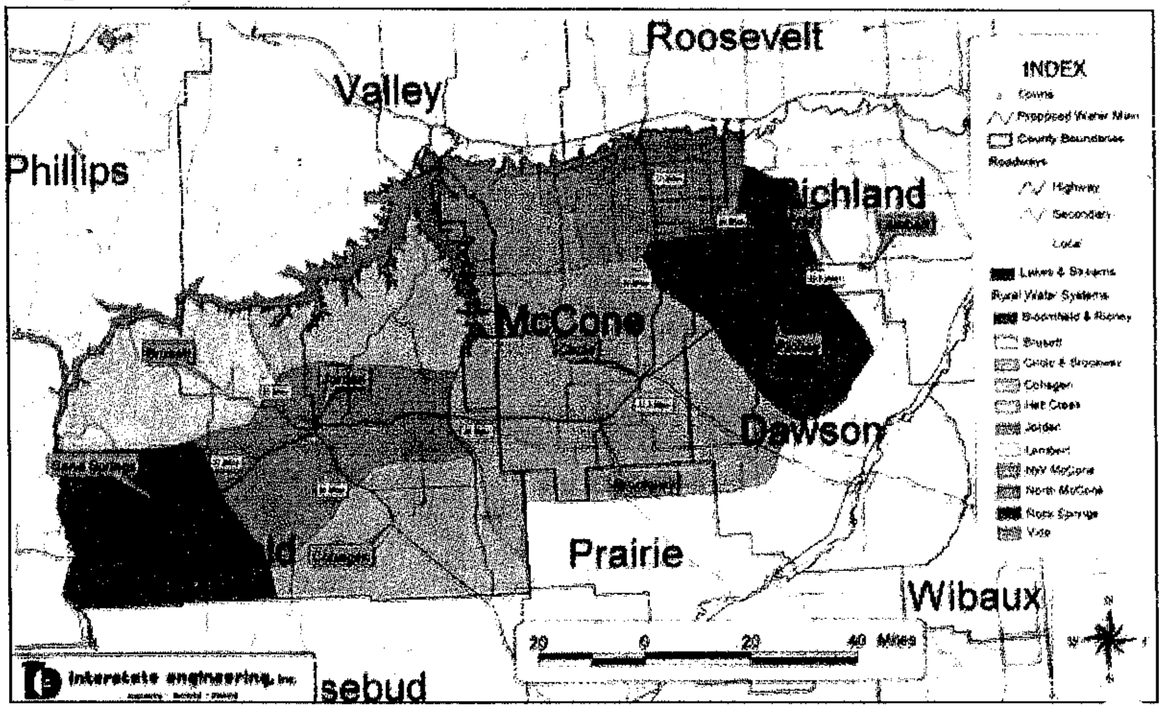
If you are interested in having GOOD Quality water , we encourage you to mail in your survey or if you have any questions call the McCone Conservation District at 485-2744 ext. 100, Garfield Conservation District at 557-2232 , Richland Conservation District 433-2103 ext 101, Dawson Conservation District 377-5566 ext 101 or Tod Kasten at 485-3374.



The Circle Banner
Aug. 12, 2004
IE# S04-80

IE#504-80

THE CIRCLE BANNER • Circle, MT • Thursday, October 14, 2004

Plan to attend Dry-Redwater Meeting

The next meeting for Dry-Redwater Rural Water:

Wednesday,October 27 at 6:00PM Jordan, Court House

Everyone is encouraged to attend as the meetings are public meetings

Agenda:

Brian Milne of Interstate Engineering:

- Potential intake sites Dry Arm (Rock Creek or Bear Creek) Wolf Point Bridge (intake or purchase water) Devils Creek

Revised potential main pipeline routes

Financial models

Capital cost of the systems

Operating and Maintenance cost of the systems

*Decision to bring the analysis down to two or three of the potential alternatives

***What is the next step(s)?

1. Meetings with the public and town councils for sure.

2. Is it time to formally create a new entity and formally form a board of directors.

Suggestions on how to do this:

The best form of entity that we are being told is to form a Water Authority.

What should its name be?

- Dry-Redwater Rural Water Authority
- Dry-Redwater Water Authority
- DR Rural Water Authority

OTHERS?

Formation of the board?

One member from.....

-McCone Conservation District

-Garfield County Conservation District

-Garfield County

-McCone County

-City of Jordan

-City of Circle

-City of Richey or surrounding area

-City of Lambert or surrounding area

-An At Large Member

OTHERS? Different?

OTHER BUSINESS?

Dry-Redwater moves forward

Dry-Redwater efforts move forward.

The meeting Wednesday night in Jordan of the Dry-Redwater Rural Water steering committee (basically any interested person in the service area that attends the meetings)was very informative.

The results to date indicate that building a rural water system for household and livestock drinking use is physically and financially feasible.

The estimated cost numbers are not completely finished yet but at this time they indicate, (depending on how much water you used and assuming that the project will qualify for about 88% federal and state grants) that the rates would be someplace between $30.00 to $60 per month on average. If about 2,000 gallons per month used about $30.00 If about 10,000 gallons per month used about $55.00 The estimated livestock rate per gallon is not yet completely determined.

There are still a few factors that need to be addressed. One is the current debt loads of the towns. We will attempt to get these included in the above rate if possible. The other is if we could get more people interested.

Currently there are about 1,400 interested households and livestock hookups. If the number of users would go up the cost per user would come down.

Also, if the proposed coal plant for McCone County would happen, the cost of the water system could greatly decrease. Also, the potential cost saving of using some of the existing storage tanks was not included.

However, it is best to move forward with the most conservative estimate possible. If these positive things happen the rates could decrease which would only make the project that much better.

The location that indicates the most feasible system points toward having the intake structure and treatment plant located near Highway 24 someplace around Rock Creek or Bear Creek area.

We are working to obtain grant funding to finish the engineering report and obtain the final estimated numbers.

There are plans to have public meetings sometime this winter (hopefully January or February) to provide more accurate figures and information.

Then individuals and towns will be asked if they are wi[illegible] to make a commitment to [illegible] project.

So let everyone know that the project is possible. And, that if they are at all interested in good quality reliable water that they should indicate their interest by contacting their local conservation district offices.

The more people that become involved the lower the cost per user.

The Circle Banner
Nov. 4, 2004
1E#504-80

Rural counties join together for Dry-Redwater

By Margaret Brinkley
Ranger-Review *Staff Writer*

There's a project being proposed which would bring municipal quality water to some very rural areas in Dawson, Garfield, McCone and Richland counties for use by households and livestock.

The Dry-Redwater Project proposes to supply these areas from a central water treatment plant near Fort Peck Lake and transport it to rural towns and residents through a pipe system. The pipe system would likely follow along rural roads, said Tod Kasten, one of the proponents of the water system.

The proposed project area is currently Garfield and McCone counties, Richey and Bloomfield, Lambert and western Richland County, he said. It's a pretty big loop for the water system and because the project is in the beginning stages, organizers are not sure what the boundaries would be, he added.

The reason for the water project is there are many people in the proposed area who do not have enough water or don't have quality water. The system would serve households and livestock and is not an irrigation system, Kasten explained.

The system is basically a municipal water system on a much larger scale, he said. It is feasible because of the number of people involved. The more people involved in the project, the more economical it is. Combining residents of rural towns with residents outside of the towns is what makes it feasible, Kasten said.

There are four water treatment plants in the proposed area. Two of the plants, Richey and Circle, are supplied with ground water and use reverse osmosis, the most costly way of treating water. The proposed plan uses one water treatment plant and surface water from the Missouri River. In most cases, it's less costly to treat surface water, Kasten explained.

The quality of water in these rural areas is low when compared to the water quality in municipal systems, Kasten said. Ground water in many areas of the project tends to be high in sulfates, alkaline, sodium and other minerals which make it hard to drink. There are people who have good quality water but just a few miles away there are people who have water which is unfit for human consumption, Kasten said. "For a high percentage of people in our area the water quality is not of great quality," he added. He said he's very surprised at the number of people who routinely have all their water, in some cases even the water they use for their laundry, brought in.

There are many benefits to municipal quality water, Kasten said, including health, less cost than hauling it in, an increase in property values, increased access for rural firefighting, and an increase in livestock health as well. In test studies done by the University of South Dakota in Brookings, S.D., calves raised with municipal quality water were healthier and heavier than calves raised using well water, Kasten said. The difference, in part, was contributed to the lower sodium levels found in municipal water.

While still in the early stages, there have been many meetings held on the project in Richey, Vida, Circle, Lambert, Elmdale and Jordan, Kasten said. There are 1,200 potential hook-ups for household use and about 750 potential hook-ups for livestock use.

Right now, organizers are gathering information and have contracted with an engineer for a preliminary engineering report to include a cost analysis and feasibility study. The least cost system would be to have the intake treatment plant located somewhere between Rock Creek and Bear Creek on the east side of Fort Peck. The pipe system will run primarily along county roads and highways to deliver the water, Kasten said.

Very preliminary cost estimates indicate the cost to users at between $30 and $55 per month, depending on the size of the home being served. The numbers are still being worked out and any estimates are very preliminary, Kasten cautioned. He said they hope to have the engi-

Project

neering study done sometime during the summer followed by additional meetings in the fall.

Interest in the project has been overwhelming, Kasten said. "If you don't have good water, you really do have problems," he added. As a rancher, he said he knows that water is very important part of ranching, possibly more important than grass.

Although construction is two to three years away, over $90,000 has been raised through local donations, the Department of Natural Resources and Department of Commerce and the U.S. Economic Development Administration, Kasten said.

The next step is to complete the engineering report and then take it back to the people and find out if they're interested enough to pay a sign up fee. The fee would be later applied to their hook-up charges, he said. After that, it will be time to seek out federal and state funds to assist with the construction of the water system.

Anyone interested in the project may contact their local conservation district office or Kasten at 1(406)485-3374.

904-80

Dry-Redwater Rural Water Project Moves Forward

The results to date indicate that building a rural water system for household and livestock drinking use is physically and financially feasible.

The estimated cost numbers are not completely finished but at this time the figures indicate that the rates would range somewhere between $30 to $60 per month on average. This rate depends on how much water individual users consume, and assumes that the project will qualify for approximately 88% federal and state grants. A 2000 gallon per month usage would cost about $30, while a 10,000 gallon per month usage would average about $55.

The estimated livestock rate per gallon is not yet completely determined.

There are still a few factors that need addressed. One factor involves the current debt loads of the towns. We will attempt to get these included in the above rate if possible. The other factor depends on the amount of interest individuals and communities have in the project.

Currently there are about 1,250 interested households and 750 livestock hookups. If the number of users would go up the cost per user would come down. Also, if the proposed coal plant for McCone County would materialize, the cost of the water system could greatly decrease.

The potential cost saving of using some of the existing storage tanks was not included in the estimate. However, it is best to move forward with the most conservative estimate possible. If these positive things happen the rates could decrease which would only make the project that much better.

The most favorable location for the system points toward having the intake structure and treatment plant located near Highway 24 someplace around Rock Creek or Bear Creek area.

The volunteer steering committee has spent a lot of time and effort gathering information on this project. The response from the communities had indicated a favorable reaction as long as it is affordable.

To date the steering committee has raised a little over $90,000 which will cover the costs required to finish the engineering report and obtain the final estimated numbers. The funding has come from close to $10,000 in local donations, along with grants from the Montana Department of Natural Resources, Montana Department of Commerce and strong support for the Federal Economic Development Administration.

The engineering study will be completed this summer. There are plans to have public meetings sometime this fall to provide more accurate figures and information. At that time individuals and towns will be asked if they are willing to make a commitment to the project. Once the design of the system is in place, it is very important to have all the users signed up. Users wanting to sign on after the design is in place may not be able to sign on or else it will cost considerably more for those late users to take advantage of the project.

The Steering Committee will hold a meeting in the near future to discuss the formation of a legal entity called the Dry-Redwater Regional Water Authority. The entity will be locally owned to carry out all activities required to bring good quality and quantity water for typical household and livestock drinking use.

Let everyone know the project is possible. If people are at all interested in good quality reliable water they must indicate their interest by contacting their local conservation district offices. The more people that become involved the lower the cost per user. If you haven't filled out a survey and are interested in GOOD QUALITY WATER, surveys are available at the McCone Conservation District or people may call 485-2744 ext.100.

Dry-Redwa r Water Project Moving Forward

Progress is being made in the Dry-Redwater Rural Water Project. The results to date indicate that building a rural water system for household and livestock drinking use is physically and financially feasible.

The estimated cost numbers are not completely finished yet but at this time they indicate, (depending on how much water you used and assuming that the project will qualify for about 88 percent federal and state grants) that the rates would be someplace between $30 to $60 per month on average.

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Continued from page 1

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Once the design of the system is in place, it is very important to have all the users signed up at this time. Users wanting to sign on after the design is in place may not be able to sign on or it will cost considerably more for those late users to sign on.

The steering committee will be holding a meeting sometime this month to discuss the formation of a legal entity called the Dry-Redwater Regional Water Authority. The entity will be locally owned to carry out all activities required to bring good quality and quantity water for typical household and livestock drinking use.

So, let everyone know that the project is possible And, that if they are at all interested in good quality reliable water, that they should indicate their interest by contacting their local conservation district offices

The Herald-News
February 10, 2005
IE # S04-806

The more people that become involved the lower the cost per user. If you haven't filled out your survey and are interested in good quality water, surveys are available at the McCone Conservation District or by calling 406-485-2744 ext. 100.

The Circle Banner
February 10, 2005
IE# S04-80 E

Rural water system physically and financially feasible

The results to date indicate that building a rural water system for household and livestock drinking use is physically and financially feasible.

The estimated cost numbers are not completely finished yet but at this time they indicate, (depending on how much water you used and assuming that the project will qualify for about 88% federal and state grants) that the rates would be someplace between $30.00 to $60 per month on average. If about 2,000 gallons per month used about $30.00 If about 10,000 gallons per month used about $55.00 The estimated livestock rate per gallon is not yet completely determined. There are still a few factors that need to be addressed. One is the current debt loads of the towns. We will attempt to get these included in the above rate if possible. The other is if we could get more people interested.

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The engineering study will be completed this summer and there are plans to have public meetings sometime this fall to provide more accurate figures and information. At that time individuals and towns will be asked if they are willing to make a commitment to the project. Once the design of the system is in place, It is very important to have all the users signed up at this time. Users wanting to sign on after the design is in place may not be able to sign on or it will cost considerablely more for those late users to sign on.

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So let everyone know that the project is possible. And, that if they are at all interested in good quality reliable water that they should indicate their interest by contacting their local conservation district offices.

The more people that become involved the lower the cost per user. If you haven't filled out your survey and are interested in **GOOD QUALITY WATER,** surveys are available at the McCone Conservation District or you can call 485-2744 ext.100.

Glendive Ranger-Review
April 3, 2005
IE# S04-80

Coal-fired power plant project planned near Circle is moving forward

By Cindy Mullet
Ranger-Review Staff Writer

Great Northern Power Development which is planning to develop a coal-fired power plant in the Circle area will file an air quality permit application for the proposed plant within the next month

According to Richard Voss, a company vice president based in Bismarck, N.D., the air quality permit is one of the key permits the company needs to obtain before proceeding with the project When the permit is received, it will strengthen the company's ability to attract customers and determine how quickly the project will move forward

Development of the coal-fired power plant is customer driven, he explained. Construction will not start until the company has customers lined up and ready to buy the power to be produced. That is probably still a couple years down the road. It is a slow process, he said, adding that if customers are lined up more quickly, construction may also move ahead more quickly.

In preparing the permit application, company officials are working to ensure this will be one of the cleanest plants in the country "We want to be sure it is clean or cleaner than any other plant," he said.

Officials have looked at the technology being used by other new plants and are working to meet or exceed those standards Extra scrubbing is planned for the plant to remove some of the harmful emissions. Engineering estimates say these standards can be met, and the company can still be competitive, Voss noted

Company officials have appreciated the local support they have received for the project. As soon as plans are a little more defined they plan to hold town meetings in the area to make people aware of the status of the plant. These may be held yet this year, he said.

GNPD, a privately held power project development affiliate of Great Northern Properties, announced its plans to develop a coal-fired power plant in the Nelson Creek area near Circle in March 2004.

Dry Redwater Project Needs to Know Level of Interest

The engineering study for the Dry Redwater Project indicates that the overall system is financially very feasible. However, the majority of people indicating interest in the project to date mainly live in McCone County.

The Steering Committee needs to specifically know if people in the following areas are interested in joining with this project:

* West of Jordan, (Sand Springs and Brusett) and south Garfield County in the Cohagen and along highway 462 area.

* West side of Richland County and area surrounding Lambert.

* West side of Dawson County and area surrounding Richey and especially the Bloomfield area.

There is no commitment at this time. However, if people do not soon express an interest they will not be included in the engineering study. It would be a shame to not be included since we have raised enough money to have this study completed. People can be included in the study for free, so if at all interested in good quality and quantity household and livestock water please contact your local Conservation District Office.

The best estimates at this time put the cost of household water between $40 and $60 per month depending on water usage.

The water system has many benefits for health, safety, economics, and for many of our neighbors who do not have good quality or quantity of water. The cost of water for most people is surprisingly high if they stop to consider all of the costs that they have associated with obtaining water.

Please stop and consider this subject very seriously. The study is a $100,000 effort that is now completely paid for.

If people have any interest at all or if they have any questions, call the local County Conservation District

Roundup
april 27, 2005
IE# 504-80

The Circle Banner
May 5, 2005
IE#504-80

Are you interested?

As you know, the engineering study is indicating that the overall system is financially and engineering wise very feasible. However, the majority of people indicating interest to date mainly live in McCone County.

We need to specifically know if people are interested in the following areas: - West of Jordan, (Sand Springs and Brusett) and South Garfield Co. in the Cohagen and along highway 462 area, - West side of Richland County and area surrounding Lambert, - West side of Dawson County and area surrounding Richey and especially the Bloomfield area.

There is no commitment at this time. However, if you do not express your interest you will not be included in the engineering study It would be a shame to not be included in the engineering study since we have raised enough money to have this study completed. Basically you can be included in the study for free, why not express your interest if you are even a little bit interested. If you are at all willing to consider good quality and quantity household and livestock water please contact your local Conservation District Office.

The best estimates at this time

Continued on Page 1(

Interested?

Continued from Page 1

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So please stop and consider this subject very seriously The study is a \$100,000 effort that is now completely paid for

If you have any interest at all or if you have any questions, please call your local County Conservation District

Proceedings from the Town Council

Town Council Meeting
April 11, 2005

A meeting of the Town Council was held on April 11, 2005 in the Town Hall. Those present were Mayor Ronald E McFarland, Chairman Clint Haynie, and Council members Joel Haynie, Larry Cornelia, Angie Metzenberg, Paula Kuntz and CC Arnston. Others present were Carol Markuson and Julie Howard. Chuck Wilhelm came in at a later time.

Call to Order The meeting was called to order at 7:05 p.m by Mayor McFarland.

Agenda Julie Howard-Chamber of Commerce was added to visitors on the agenda The agenda was approved by a motion, seconded and carried

Minutes The following changes were made to the March minutes. Park it should read 'received from Strand's" instead of received form Strand's' John Isaacs 'If vehicle', instead of It vehicles City Services 'Quick will use his skidsteer' instead of Quick will take a use his skidsteer Noting those changes, the minutes were approved by a motion, seconded and carried

Visitors- Julie Howard reported to Council that the Chamber of Commerce wants to have a big celebration for our 100th Birthday. They are planning to erect a sign that announces our 100th year celebration with Helen Murphy and Katie Hunsel's names on the sign because they will be 100 this year. They have ordered centennial coins that will be sold for $2.00 each. They are planning to have a 'yard of the week' program starting May 9th The Chamber will pick the first yard and whoever wins that week will pick the next yard All winners names will be placed in a drawing. Two names will be drawn to win $50 off their water bill. The chamber will pay $50.00 for the prize and the Town Council agreed to pay the additional $50.00 prize. Julie reported some upcoming events. Garage Sale Day will be June 4th; July 17th and 18th Circle will host the Circle Class reunion from the beginning to 1957; July 15th a class reunion will be held for the Classes from 1958 - 1979. This will be the day before Brockway Dairy Day and they want to block off Main Street for an old car show. Angie reported that a 10 year class reunion will be held the 4th of July weekend

Park

Ron reported that the tin for the shelter at the park has been ordered.

Loberg s will be locating the sewer line across from the Sinclair and will be installing a sewer dump site.

An article will be in this weeks paper about cleaning yards and removal of old vehicles Len Kuntz still operates under the junk vehicle program and will haul old vehicles out or if there is any interest. He may have an area to store vehicles for a fee

Department Heads:

Streets and Alleys -Clint Haynie and Larry Cornelia

Park and Pool -Angie Metzenberg and Joel Haynie

Water and Sewer -CC Arnston and Paula Kuntz

Sewer - No report

Streets- Ron reported that once the concrete is removed at the Sullivan building lot the hole will be filled in. Huseby's will pull out the old sidewalk and it will be set in place or replaced with gravel. Council discussed repouring the sidewalk. It was discussed that this is private property owned by Marvel Voegele and it is the property owners responsibility to replace the sidewalk

There is a hole in the street by the Woody Hawkinson residence that needs to be filled in. There is a sinking area in the street in front of the Memorial Building where the line was replaced.

There is a hole in the sidewalk in front of where the old White House used to be by the curbstop.

There is a dip going into the alley by the James Clinton residence.

The above items will be discussed with city services.

Clint asked about painting the alley corners. It was discussed that this can be done along the highway but not on other streets

Water Ron reported that Perry will be taking the high service pump from the water treatment plant to Oddvar for repair. Paula reported that Perry has taken the pump out to Circle Machine Works.

Chuck Wilhelm entered the meeting.

Ron gave Council a review of the Dry Redwater project. Resolution 4-11-05-1 was read and it was approved to sign the resolution and the Agreement by a motion, seconded and carried. Council discussed some possible names of individuals that may be interested in serving on this board as a representative for the Town of Circle.

Chuck Wilhelm- Chuck asked Council if they were going to be discussing the dog ordinance He stated that he has some suggestions for kenneling dogs Council stated that we will be reviewing the dog ordinance at a special meeting to be held on April 25th Chuck left the meeting

City Services- Ron reported that Allen Caftan has been hired to fill the city services position. He will be coming to Circle this weekend to look for housing. He does have training for this type of work.

Garbage- No report

Fire Department- Council discussed the suit purchase made by the fire department.

Law Enforcement- Resolution 4-11-05-2 was read and approved by a motion, seconded and carried. Council discussed the law enforcement contract.

Pool and Park-

It was reported to Council that additional lifeguards will be needed for the pool season. It was discussed that the job listing should be put in the school paper and close it on May 15th

The new regulations for wading pools was discussed.

The material for the shelter roof has been ordered. Joel stated that he would help Ron put the new roof on.

Ron reported that 20 trees have been ordered for the park. he found some old wire to use around the trees, but they may have to purchase some stakes

Dennis Wolff has given the Town permission to put an outside spigot and electrical outlet on his building to use in Gazebo park. It was stated that Bill Loberg thought he could put the electrical outlet on the Gazebo. It was requested that a lock box be put on the spigot so that a key will have to be used to access the water

Zoning

Chris Bateson-Fence

Mike Metzenberg Fence and Shed

Jettra Bufo-Deck and Fence

Rex Sikveland-Fence

Bill Haviland-Fence

A motion was made to approve the zoning permit seconded and carried.

Financial Report - The financial report was approved as presented by a motion seconded and carried.

Policy Manual - The drug and alcohol policy was discussed Council felt that the current policy has more detail and should be added to Section 16. A motion was made to adopt the policy manual with the revision to the drug and alcohol policy, seconded and carried. Each employee will be given a copy of the new policy with a Receipt page to sign.

Resolution 4-11-05-4 Sewer Assessment Resolution The resolution was tabled until the next meeting to verify the transfer amounts

Department of Administration BARS meeting The June BARS meeting will be held in Glendive on Wednesday, June 15, 2005 Paula would like to attend with Carol

Bills Payment of the bills was approved by a motion and carried.

Delinquent Report The delinquent report was reviewed by Council.

Justice Court Report- No report.

Dog Ordinance - The dog ordinance will be reviewed at a special meeting to be held on April 25, 2005.

Water Treatment Ron mentioned that we should possibly have Ham come to Circle for some additional training. Council didn't think that was necessary at this time

Continued on Page 10

Town Council

Continued from Page 7

Becker Addition- The sewer line problems in the Becker addition were discussed. Loberg's will be replacing the Main and letters have been sent to all of the property owners to connect to the line.

Adjourn - The meeting was adjourned by a motion seconded and carried.

Ronald E McFarland Mayor Carol Markuson Town Clerk Treas

The Circle Banner
May 5, 2005
IE# S04-80

Individuals interested in rural water project sought

By Margaret Brinkley
Ranger-Review Staff Writer

Organizers behind a project to bring municipal quality water to very rural areas, including a portion of western Dawson County and the areas surrounding Richey and the Bloomfield area, are looking for individuals interested in being included in an engineering study of the project.

The project being proposed would bring municipal quality water to some very rural areas in Dawson, Garfield, McCone and Richland counties for use by households and livestock.

The Dry-Redwater Project proposes to supply these areas from a central water treatment plant near Fort Peck Lake and transport it to rural towns and residents through a pipe system.

The $100,000 engineering study is paid for, said Tod Kasten, one of the proponents of the water system, adding that most of the interest so far has come from McCone County residents. "Basically, you would be included in the study for free, so why not express interest if you are even a little bit interested," he said. "If you are at all willing to consider good quality and quantity household and livestock water, please contact your local conservation office."

The reason for the water project is because there are many people in the proposed area who do not have enough water or don't have quality water. The system would serve households and livestock and is not an irrigation system, Kasten explained.

The system is basically a municipal water system on a much larger scale, he said. It is feasible because of the number of people involved. The more people involved in the project, the more economical it is. Combining residents of rural towns with residents outside of the towns is what makes it feasible, Kasten said.

The proposed project area is currently Garfield and McCone counties, Richey and Bloomfield, Lambert and western Richland County, he said. It's a pretty big loop for the water system and because the project is in the beginning stages, organizers are not sure what the boundaries would be, he added.

There are many benefits to municipal quality water, Kasten said, including health, less cost than hauling it in, an increase in property values, increased access for rural firefighting, and an increase in livestock health as well. In test studies done by the University of South Dakota in Brookings, S.D., calves raised with municipal quality water were healthier and heavier than calves raised using well water, Kasten said. The difference, in part, was contributed to the lower sodium levels found in municipal water.

"The best estimates at this time put the cost of household water at some place between $40 and $60 per month depending on how much water you might use," he said. "The water system has many benefits for health, safety, economics and for many of our neighbors who do not have good quality of quantity of water. The cost of water is surprisingly high for most people if they stop to consider all of the costs that they have."

Anyone interested in the project may contact their local conservation district office or Kasten at 1(406)485-3374.

File 504-80 W

Redwater

ROUNDUP, WEDNESDAY, MAY 25, 2005

Water Quality for Livestock

Wade Whiteman
Richland County Extension Agent

How is the water on your place? Is there enough? The recent rains have sure helped freshen up the water supplies in Richland County. For the time being there is not much of a shortage of water, but what is the quality of the water? Many times if cows are drinking the water, then it must be good. In some cases water may be palatable, yet be poor enough that there is a reduction in performance.

So what causes poor water quality? In our area, it is primarily high salinity. Water is a very good solvent and naturally contains some dissolved substances. Most of these are inorganic salts, the calcium, magnesium and sodium chlorides; sulfates, and bicarbonates predominating. Excessive salinity in livestock drinking water can upset the animal's water balance. Unsafe levels of salts and ions depend on the amount of water that they consume each day. On a 90 degree day a lactating cow can consume 18 gallons of water!

Nitrates are commonly known to be a problem in stressed cereal forages. However nitrates can be toxic in drinking water. At high levels, especially when being fed high nitrate feed, it is related to the transformation of hemoglobin into methemoglobin which will not carry oxygen. Since nitrates are not absorbed to soil materials, and may leach to groundwater, nitrogen that is not used for crop or plant growth easily reaches the groundwater causing problems.

A conductivity test is a simple test that measures the total of all salts dissolved (TDS) in water, usually expressed in parts per million (ppm). Levels greater than 2000 ppm may reduce performance and need to be monitored closely. The test for TDS is a simple, quick test that can be performed on site with a pocket conductivity tester. If you are interested in having your livestock well tested call the Richland County Extension Office to set up a time. We can be reached at 433-1206 or stop by the office at 123 West Main in the Nutter Building. More information is also on the web at www.richland.org/extension.

504-80

ROUNDUP, WEDNESDAY, JULY 6, 2005

Dry Redwater Update

The Dry-Redwater Regional Water Authority is redoubling its efforts to inform members of our community about the opportunity to be included in the study that will determine if it is possible to get water to everyone that might be even a little interested and what the cost would be.

BobiRaye Ross, Sheena Hinnaland, Lonnie Steppler and Dick Iverson have been calling as many rural people as they possibly can to visit with them about being involved with this effort In addition, the Conservation Districts are helping and welcome anyone and everyone to let them know if people are interested. So contact your local

Conservation District if you are even a little interested in pursuing this project.

There is no cost or commitment of any kind at this time. However, the only way to obtain the most accurate idea of what it might cost is to determine how many and who the people are that might be interested; then obtain section, township and range information so it is known where people might want the water and if they want it for household use and/or for livestock use as well.

Many of our neighbors, right at 300 households to date, have expressed an interest in being a part of the study And, the communities of Jordan, Circle, Richey and Lambert have decided they want to be a part of the study

We would encourage everyone to seriously consider involving themselves with the study The costs of moving power lines, treating water, having bad water (which a number of us have), hauling water and everything else considered make it at least worth seriously considering.

The document forming a legal entity called the Dry-Redwater Regional Water Authority was sent to the Secretary of State to be filed. The documents have been filed in all four participating Counties.

The members of the Water Authority are: Towns of Circle, Jordan and Richey; McCone and Garfield County, and the Conservation Districts of all four areas: McCone, Garfield, Richland and Dawson.

The appointed board members from the member entities are: Baan Wille, Mike McKever, Dean Rogge, Henry Helgeson, Tod Kasten, John "Sonny" Whiteman, Pat Eggebrecht, Walter Borntrager and Roger Meyer

If you are at all interested please contact your local Conservation District in McCone, Garfield, Dawson or Richland County.

Thank you for your time and consideration.

Tod Kasten 485-3374

Dry-Redwater Update

By Tod Kasten

The Dry-Redwater Regional Water Authority is redoubling its efforts to inform members of our community about the opportunity to be included in the study that will determine if it is possible to get water to everyone that might be even a little interested and what the cost would be.

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There is no cost or commitment of any kind at this time.

However, the only way to obtain the most accurate idea of what it might cost is to determine how many and who the people are that might even be a little bit interested; then obtain section, township and range information so it is known where they might want the water and if they want it only for household use or if livestock use is something they are also interested in.

Many of our neighbors, right at 300 households to date, have expressed an interest in being a part of the study. And, the communities of Jordan, Circle, Richey and Lambert have decided they want to be a part of the study.

We would encourage everyone to seriously consider be involved with the study. The costs of moving power lines, treating water, having bad water (which a number of us have), hauling water and everything else considered make it at least worth seriously considering.

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If you are at all interested please contact your local Conservation District in McCone, Garfield, Dawson or Richland County

Thank you for your time and consideration.

7/14/05

The Circle Banner
August 25, 2005
IE # S04-80

Minutes from the Dry-Redwater Authority

Dry-Redwater Water Authority Meeting Minutes
July 27, 2005

Dry-Redwater Rural Water Authority held there first meeting July 27, 2005 at 6:00pm. at the USDA Building in Circle, Montana.

Present were Tod Kasten, Mike McKeever, Roger Meyer, Baan Willie, Dean Rogge, Pat Eggebrecht, Jeff Heinz, Interstate Engineer, Ross Lagasse, Interstate Engineer, Sheena Hinnaland, Jerry Meissner and Jeanne Kirkegard.

Tod Kasten gave an update on where we are at with the survey's Sheena Hinnaland, Bobbi Ray Ross and Lonnie Steppler were contacted to help complete phone surveys in their county.

Members received a copy of the rural water authority filed with the state Kasten handed out a copy of by-laws for the members to review. Discussion was held on how the terms should be appointed and the board will operate. After further discussion Pat Eggebrecht made a suggestion to table the selection of officers and the by-laws until the next meeting in October. Everyone agreed

Interstate gave a brief report on the feasibility study. Comments were made by members that they do not have all the hook-ups mapped on the map. Discussion was held to make one big push to complete the surveys by the middle of August and turn them into Interstate Currently there are about 650 total rural hookups (including livestock and household) that are signed up.

Members all agreed that we should have everything done by the middle of September 2005. Interstate Engineer stated they thought they could have the study completed by the end of September.

Roger Meyer commented on the contract with Interstate Engineer Inc who is responsible for those grant funds. Kasten stated the contract is with McCone Conservation District and Dry-Redwater Water Authority does not have any grant funds responsibility at this time.

Terms for the Board of Directors were determined using a random list of board members and just listing numbers 1-4 representing years of terms then repeated until all the Board was assigned a term of office. The terms starting October 1st 2005 are: Roger Meyer, 1 year; Sonny Whiteman, 2 years; Walter Borntrager, 3 years; Mike McKeever, 4 years; Baan Willie, 1 year; Dean Rogge, 2 years; Pat Eggebrecht, 3 years; Henry Helgeson, 4 years; Tod Kasten, 1 year.

At the next Board meeting the officers will be elected And, action will be taken on the DRAFT by-laws that were given to all the board members.

Discussion was held to have the next meeting October 4, 2005 at 6:00 PM.

In Circle at the Conservation Office. Meeting was adjourned at 7:45

504-80

PUBLIC MEETING NOTICE

Environmental Scoping Meeting
Dry-Redwater Regional Water Authority (DRWA)
December 12, 2005
6:30 p.m.
Circle High School Auditorium
Circle, Montana

The Dry-Redwater Regional Water Authority (DRWA) is holding a public environmental scoping meeting to gather input for the feasibility study currently being conducted. The study area encompasses areas in McCone, Garfield, Prairie, Dawson and Richland Counties, Montana. The project involves constructing a 1000-1500 gpm surface water treatment facility in the Rock Creek-Bear Creek region of the Big Dry Arm of the Fort Peck Reservoir The regional water system will provide treated water to approximately 3500 users through a series of booster stations, water storage reservoirs and buried pipeline ranging in size from 1" to 12". The pipeline route will generally follow the most direct route via major highways and county roads and rights-of-way. In a few isolated areas, the pipeline route will be cross-country and the right-of-way will be obtained from private landowners. The exact location of the pipeline is undetermined and will be adjusted to avoid environmentally sensitive areas, areas that private right-of-way cannot be obtained or based on findings or comments received at the scoping meeting

Please attend the scoping meeting and ask any questions you may have on the environmental and socio-economical impacts of the proposed project. If you are unable to attend the meeting, please submit written comments or questions to McCone County Conservation District, PO Box 276, 106 10th Street, Circle, MT 59215-0276 on or before December 12, 2005 If you have further questions please contact Interstate Engineering, Inc at 406-433-5617

Published in Jordan Tribune November 18, 2005

10/4/05

Dry-Redwater Water minutes

Dry-Redwater Water Authority Meeting Minutes
October 4th, 2006
Dry-Redwater Rural Water Authority held there meeting October 4th, 2005 at 6:00pm at the USDA Building in Circle, Montana.

Present were Tod Kasten, Mike McKeever, Sonny Whiteman, Dean Rogge, Pat Eggebrecht, Brian Milne, Interstate Engineer, Ross Lagasse, Interstate Engineer, Rick Duncan, DNRC and Jeanne Kirkegard. Roger Meyer, and Baan Willie, Henry Helgeson, Walter Borntrager, and Roger Meyer were not present

Baan Willie unfortunately had to request to be excused for a surgery he was to have.

Tod Kasten asked if any additions to the agenda.

Minutes were reviewed from the July 27th meeting Kasten made a motion to approve the minutes with the exception of the corrected addition with the members and their terms listed. Eggebrecht seconded the motion Motion carried

Kirkegard handed out a summary of the grant funds that are available for the feasibility study

The board agreed the by-laws were fine. Will wait till next meeting to formally approve them.

The board decided to appoint officers until next meeting. The election of officers was tabled.

Brian Milne gave a report to the board on the study Milne said that after the surveys were done that we have about 1668 users Milne explained that there are 3 areas that will be set aside from the project. There just aren't enough users in these areas If there is more interest latter they will be added to the project

Milne went over what the rates would be with the users that are signed up. The board asked Milne to adjust the rates for the livestock so that potential users could see what they might be on a per head basis 100 head basis to be shown, ie what is the potential monthly cost of a hookup (base and usage) for a tap that would serve 100 head of cows.

Discussion was held on having public/scoping meetings this winter Rick Duncan from DNRC suggested having the scoping meetings to also address any environmental issues.

Duncan also suggesting talking with Laurie Zeller about monies for legal council

The next board meeting will be December 12th, 2005. It was decided to meet at the court house in Circle at 5:00 pm. for just the board members then have the public scoping meeting to follow at 6:30 for the public.

Meeting adjourned at 7:50 PM.

10/4/05

The Circle Banner
Nov. 17, 2005
IE# S04-80

Public Notice

Public Meeting Notice
Environmental Scoping Meeting
Dry-Redwater Regional Water Authority (DRWA)
December 12, 2005
6:30 p.m.
Circle High School Auditorium
Circle, Montana

The Dry-Redwater Regional Water Authority (DRWA) is holding a public environmental scoping meeting to gather input for the feasibility study currently being conducted. The study area encompasses areas in McCone, Garfield, Prairie, Dawson and Richland Counties, Montana. The project involves constructing a 1000-1500 gpm surface water treatment facility in the Rock Creek-Bear Creek region of the Big Dry Arm of the Fort Peck Reservoir. The regional water system will provide treated water to approximately 3500 users through a series of booster stations, water storage reservoirs and buried pipeline ranging in size from 1" to 12". The pipeline route will generally follow the most direct route via major highways and county roads and rights-of-way. In a few isolated areas, the pipeline route will be cross-country and the right-of-way will be obtained from private landowners. The exact location of the pipeline is undetermined and will be adjusted to avoid environmentally sensitive areas, areas that private right-of-way cannot be obtained or based on findings or comments received at the scoping meeting.

Please attend the scoping meeting and ask any questions you may have on the environmental and socio-economical impacts of the proposed project. If you are unable to attend the meeting, please submit written comments or questions to McCone County Conservation District, PO Box 276, 106 10th Street, Circle, MT 59215-0276 on or before December 12, 2005. If you have further questions please contact Interstate Engineering, Inc. at 406-433-5617.

Published in The Circle Banner, Circle, MT 59215 11/17 of 2005

504-80

FAX 406-557-6284 – The Jordan Tribune – 406-557-2337

Scoping Meeting Scheduled In Circle

A public environmental scoping meeting will be held at the Circle High School Auditorium in Circle on Monday, December 12. The study area encompasses areas in McCone, Garfield, Prairie, Dawson and Richland counties.

The regional water system will provide treated water to approximately 3500 users, if the plans go through. The pipeline route will generally follow the most direct route via major highways and county roads, although the exact location of the pipeline is still undetermined.

Make plans now to attend this meeting and feel free to ask any questions you may have. Anyone unable to attend the meeting may submit written comments or questions to McCone County conservation District, PO Box 276, 106 10th Street, Circle, Montana 59215 on or before December 12, 2005.

11/05

504-80h

DRWA environmental scoping meeting to be held in Circle

Environmental Scoping Meeting Dry-Redwater Regional Water Authority (DRWA) December 12, 2005 6:30 p m Circle High School Auditorium Circle, Montana.

The Dry-Redwater Regional Water Authority (DRWA) is holding a public environmental scoping meeting to gather input for the feasibility study currently being conducted. The study area encompasses areas in McCone, Garfield, Prairie, Dawson and Richland Counties, Montana The project involves constructing a 1000-1500 gpm surface water treatment facility in the Rock Creek-Bear Creek region of the Big Dry Arm of the Fort Peck Reservoir The regional water system will provide treated water to approximately 3500 users through a series of booster stations, water storage reservoirs and buried pipeline ranging in size from 1" to 12". The pipeline route will generally follow the most direct route via major highways and county roads and rights-of-way. In a few isolated areas, the pipeline route will be cross-country and the right-of-way will be obtained from private landowners The exact location of the pipeline is undetermined and will be adjusted to avoid environmentally sensitive areas, areas that private right-of-way cannot be obtained or based on findings or comments received at the scoping meeting

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***NOTE: there will be a DRWA Board of Directors meeting at 5:00PM at the McCone County Commissioners Office in Circle the same day (Dec 12, 2005)

The Circle Banner • November 24, 2005

50 4-80

Public Meetings Set For Regional Water Project

The Dry-Redwater Regional Water Authority will be holding public meetings in Lambert, Jordan, Richey, Circle and Vida. The DRWA asks that anyone even remotely interested in having good quality and quantity household and livestock water attend the meeting in their area.

The purpose of these public meetings is to share the results of the engineering study, to update where DRWA is in the overall project, and to report the best estimated hookup and monthly costs.

For those that are interested, the DRWA asks a show of support for the next step of the effort by providing a REFUNDABLE signup fee. This fee is necessary to show proof of interest to obtain grant funding. It is 100% refundable if a customer decides NOT to hook-up or if the system is not built. Otherwise, it will be used as part of the hook-up fee when construction takes place.

Currently there are 1,705 household and livestock hookups that are involved in the project. At this meeting you will be able to see if the project can deliver water to you and what the best estimated costs are. This project is very important to many of our neighbors and the community as a whole.

Join us for coffee and cookies and a good visit about this project. It is definitely possible to bring good quality and quantity water to our area through this project. Please attend so we can keep this project on track.

The meetings are as follows: Lambert: Feb. 6, 6 p.m., Lambert School Cafeteria; Circle: Feb. 20, 6 p.m., Circle High School Auditorium; Vida: Feb. 21, 6 p.m., Vida School; Richey: Feb. 22, 6 p.m., Stockman Bank Community Room; Jordan: Feb. 28, 6 p.m., Garfield County Courthouse.

Water authority announces public meetings

The Dry-Redwater Regional Water Authority will hold public meetings in Lambert, Jordan, Richey, Circle and Vida The water authority asks that anyone even remotely interested in having good quality and quantity household and livestock water attend the meeting in their area.

The purpose of these public meetings is to share the results of the engineering study, to update where the water authority is in the overall project, and to report the best estimated hookup and monthly costs

For those who are interested, the water authority asks a show of support for the next step of the effort by providing a refundable sign-up fee This fee is necessary to show proof of interest to obtain grant funding It's 100 percent refundable if a customer decides not to hook-up or if the system is not built Otherwise, it will be used as part of the hook-up fee when construction takes place

Currently there are 1,705 household and livestock hookups that are involved in the project At the meeting in your area you will be able to see if the project can deliver water to you and what the best estimated costs are This project is very important to many of our neighbors and the community as a whole.

Join officials for coffee and cookies and a good visit about this project. Officials say it's definitely possible to bring good quality and quantity water to our area through this project Please attend so we can keep this project on track

The meetings are as follows:

- Lambert, Feb 6, 6 p.m in the Lambert school cafeteria
- Circle, Feb. 20, 6 p.m. in the Circle High School auditorium.
- Vida, Feb 21, 7 p.m. at Vida School.
- Richey, Feb. 22, 6 p.m at the Stockman Bank community room.
- Jordan, Feb 28, 6 p.m. at the Garfield County Courthouse

Sidney Herald
Jan 25, 2006
IE# S04-80

Public meetings for DRWA

Public Meetings for DRWA

The Dry-Redwater Regional Water Authority will be holding public meetings in Lambert, Jordan, Richey, Circle, and Vida. The DRWA asks that anyone even remotely interested in having good quality and quantity household and livestock water attend the meeting in their area. The purpose of these public meetings is to share the results of the engineering study, to update where DRWA is in the overall project, and to report the best estimated hookup and monthly costs.

For those that are interested, the DRWA asks a show of support for the next step of the effort by providing a REFUNDABLE signup fee. This fee is necessary to show proof of interest to obtain grant funding. It is 100% refundable if a customer decides NOT to hook-up or if the system is not built. Otherwise, it will be used as part of the hook-up fee when construction takes place.

Currently there are 1,705 household and livestock hookups that are involved in the project. At this meeting you will be able to see if the project can deliver water to you and what the best estimated costs are. This project is very important to many of our neighbors and the community as a whole.

Join us for coffee and cookies and a good visit about this project. It is definitely possible to bring good quality and quantity water to our area through this project. Please attend so we can keep this project on track.

The meetings are as follows:

Lambert Feb. 6 6:00 pm Lambert School Cafeteria

Circle Feb. 20 6:00 pm Circle High School Auditorium

Vida Feb. 21 6:00 pm Vida School

Richey Feb. 22 6:00 pm Stockman Bank Community Room

Jordan Feb. 28 6:00 pm Garfield County Court House

The Circle Banner
Jan. 26. 2006
IE# 504-80

IE# 504-80

Public Meetings Set For Regional Water Project

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The meetings are as follows: Lambert: Feb. 6, 6 p.m., Lambert School Cafeteria; Circle: Feb. 20, 6 p.m, Circle High School Auditorium; Vida: Feb. 21, 6 p m, Vida School; Richey: Feb 22, 6 p.m., Stockman Bank Community Room; Jordan: Feb. 28, 6 p.m., Garfield County Courthouse.

Dry-Redwater Regional Water Project Moves Forward

By Lois Kerr, Ag Roundup Editor

The Dry-Redwater Regional Water Authority (DRWA) continues to gather momentum and to attract potential users. The DRWA, owned by the Town of Jordan, Town of Richey, Town of Circle, Dawson County Conservation District, Richland County Conservation District, McCone Conservation District, Garfield County Conservation District, McCone County and Garfield County, plans to own and operate a water system that will provide a safe water supply, transmission system, and treatment system to the member entities. Organizers of the project encourage all people in the project area who may have an interest in obtaining this water to sign on to the project as soon as possible in order to obtain a reduced rate hook-up should the project come to fruition.

"There is still room to add additional users," says Tod Kasten, DRWA organizational member. "Potential coverage area includes around and to the north of Highway 201, west on 201 down and around Lambert, west to Richey, southwest to Circle, all of McCone County, much of Garfield County and a small portion of northern Prairie County."

He adds, "To date, we have approximately 1710 individual households and livestock watering taps that have shown an interest and who are included in the study. By signing on now, interested people will be assured of a reduced hookup rate. Once construction starts, those who decide to hook into the system will have to pay the actual cost of hookup."

Engineers have nearly completed the feasibility study and preliminary reports Results indicate that if the project receives the same level of federal and state assistance that other rural water projects in Montana, North and South Dakota have received, this project can become a reality. Studies place the total cost of the project at a little over $73 million, and estimates show individual users should pay less for project water than they currently have to pay in order to obtain good drinking water from other sources

"We instructed the engineer to provide worst case cost information," says Kasten. "After factoring in all the information, it will cost on average $57.40 per month on the rural system, which will provide 8000 gallons of treated water delivered at 5 gpm at a minimum pressure of 35 psi. The average cost per gallon for a five gallon bottle of drinking water is 95 cents, which only gives a household 60 gallons of drinking water per month for that same $57.40. On the rural water system, a household would get 8000 gallons for their $57 40 and would not have to haul water or schedule a cistern to be filled."

He adds, "The final rate schedule will be set by the DRWA Board of Directors to pay for the construction loan, operational costs, and to fund a replacement account."

The DRWA has scheduled public meetings in the area to provide as much information as possible to potential users and to answer questions that people may have regarding the project

Anyone interested in obtaining a hookup to the system must provide a refundable $100 Good Intention Fee. This fee will serve as a down payment on the actual hookup during construction. "The purpose of the fee is to show proof of firm support from the users to the government and the potential funding agencies," states Kasten. "If the system is not built, or if the system is unable to deliver water to a particular household, or if at some point in the future a household decides not to hook in to the system for any reason, we will refund the $100 Good Intention fee. The $100 cost will be applied to the projected $500 hookup fee should the household hook into the system."

He adds, "Besides sending in their Good Intention Fee, we also need individual households to tell us the section, township, and range location of where they want the hookup or hookups."

Those who do not pay a Good Intention Fee now but later decide to hook into the system at construction time will have to pay the actual cost of hookup, which estimates indicate, will run more than $1000.

Kasten urges all interested people to take advantage of this opportunity now. "There are many people very interested in this project and who need a good quality and quantity of drinking water," Kasten concludes. "Just like the telephone and electric cooperatives, this project is feasible and good water could be delivered to participating households."

For more information people can contact the Dry-Redwater office at 406-485-2144 ext.100; or mail inquiries or Good Intention Fees to Box 276, Circle, MT 59215.

3/06

Minutes from the Town Council

Town Council Meeting
February 13, 2006

A Town Council meeting was held in the Town Hall on February 13, 2006 Those present were Mayor Njadl (Ned) Sikveland, Chairman Clint Haynie and Council members Joel Haynie, Angie Metzenberg, Nick Schriver and CC Arnston Larry Cornelia was absent Others present were Brian Milne, Tod Kasten, Perry Kuntz and Carol Markuson

Call to Order Mayor Njadl Sikveland called the meeting to order at 7:00 p m

Agenda The agenda was approved by a motion and unanimously carried

Minutes The minutes from the 01-09-06 meeting were approved by a motion and unanimously carried

Visitors - Interstate Engineering - Brian Milne reported on Phase I sewer lift station and Phase II Lagoon project for the Town of Circle He distributed a picture of the proposed lift stations and the three cell lagoon system. DEQ is now requesting other methods of discharge to be included in each plan He will be adding this to the proposal. He reminded Council that we will be having a public hearing at the Senior Center for the sewer project on February 14, 2006. Growth Policy Brian explained to Council that he needs to have Council form a Growth Policy Steering Committee The committee will be mailed a survey to complete and then they will meet once or twice to review the input from the survey forms Council indicated that they would contact individuals to serve on this committee Brian left the meeting.

Department Heads The following department heads were appointed by Mayor Sikveland. Streets and Alleys - Nick Schriver and Clint Haynie; Park and Pool - Larry Cornelia and Angie Metzenberg; Water and Sewer - Joel Haynie and CC Arnston.

Board Appointments

Eastern Plains RC&D - Carol Markuson; **Great Northern Development** - Carol Markuson; **Airport Board**- Ned Sikveland and Russell Pederson; **Conservation District** - Larry Nagel and **Planning Board**- Gene Markuson and Sandy Bruce

Growth Policy Steering Committee - Council discussed names of individuals that they thought might be interested in serving on this board The Clerk will contact them tomorrow

Sewer Vac Truck Council reviewed the pictures of the sewer jet truck and vac unit. Council agreed that this unit should be purchased When city services goes to the water conference, they will look at the unit and see how it is run. Resolution 02-13-06-1 was read to transfer funds from Sewer Reserve to purchase the truck by a motion and unanimously carried.

City Services Council discussed signs that need to be replaced The yield sign by Brent Bacon's, the stop sign by True Value, and the stop sign by Joe Haynie's It was reported that a form was completed to monitor when equipment is serviced and when valves are exercised.

Water Rights Legislation It was reported that the full water right fee was submitted and the water rights will be researched to see what the Town needs before the next billing.

Fire Department Ned Sikveland and Clint Kirchner are going off the fire roster and Dwain Jensen and Chris Kwasney are going on.

Pool and Park The baseball shack was discussed City Services should turn the baseball shack off when they turn the water off for the pool This will be discussed with city services Installation of an underground sprinkler system at the baseball fields was discussed No decision was made but it was discussed that the Town would not pay for the water for using an underground sprinkler system for the ball fields. Pool Personnel and Rates Council thought the rates looked Clerk's should call Glendive and Sidney to see what their rates are. The pool personnel from this past year should be called to see if they are interested in working this year and advertise if needed. The pool park mowing job will be advertised.

Zoning Tom Coulthurst-addition The permit was reviewed and approved by a motion and unanimously carried

Elevtor Task Force Tod Kasten presented a letter of support that was developed by the elevator task force committee Council agreed that the letter should be signed.

Dry Redwater Tod asked Council to think about their ideas for water line, sewer line, and shut off improvements.

Financial Report The financial report was approved as presented by a motion and unanimously carried

Reports Council reviewed the delinquent water, sewer, and garbage delinquent report

Bills The bills were approved to be paid as presented by a motion and unanimously carried.

Radio It was discussed that the radio that was sent in for repair can not be fixed. Council agreed that another radio should be ordered.

Adjourn The Council meeting was adjourned at 9:15 p.m by a motion and unanimously carried.

Njadl (Ned) Sikveland, Mayor
Carol Markuson, Town Clerk/Treasurer

The Circle Banner
March 9, 2006
E# S05-45
S06-26
S04-80

Community Economic Meeting Discusses Economic Development, Coal Mine Project

Herald News
March 30, 2006
IE #504-806

By Joelyn Hansen

On Wednesday, March 22, Wolf Point community members gathered at the Sherman Inn for a economic development community meeting and work session

There was many people that turned out for the evening event

The evening started with introductions and updates from local entities.

Mark Sansaver Enterprise Community, gave an update. He talked about the primary goal of the Enterprise Community and the steps they were taking to meet that goal.

Major Robinson, economic specialist from Governer Schweitzer's office, talked about the economic opportunities in eastern Montana.

He said, "There are a lot of opportunities in eastern Montana, now its time to capitalize on them"

He continued to speak about providing a strong economic future for our children

Dr James Shanley, Fort Peck Community College president, spoke briefly about the opportunities and programs being provided by the college.

He talked about the importance of education and training moving them forward in economic development.

"We have accomplished a lot in the last few years," he said

He also talked about the projects being done by the tribes that will bring significant economic boost to the area.

Roxanne Gourneau, Fort Peck Tribes vice chairwoman, also addressed those in attendance She talked about the importance of working together and staying committed to northeast Montana.

Northeast Montana Health Services chief executive officer Peg Norgaard gave an update on the renovation projects for both Poplar and Wolf Point.

She also noted that they recruited three new providers, one physician and two mid-levels They are also in serious talks with another physician and mid-level

They are also upgrading CT machine and adding new services. They are also in discussion with forming a co-op for Stat Air service

Wayne Two Bulls, Intergrated Solutions, spoke about Intergrated Solutions He talked about recent happenings and upcoming proposals for the b...

Demolition

Gary Macdonald leads the demolition and clean-up group in discussion during the Wolf Point community meeting on Wednesday, March 22, at the Sherman Inn

Museum Move

Boone Whitmer discusses moving the Wolf Point museum out of the basement of the library to a location of U.S. Highway 2 during the Wolf Point economic community meeting on Wednesday, March 22

Mike Neutgens spoke and gave an update on the Montana Cowboy Hall of Fame and Western Heritage Center.

The last to speak was Larry Wetsit of Nemont Telephone. He talked about the upcoming changes in service for Nemont

Clyta Dillon gave a presentation on the demographics of today's world

The presentation gave some insight into the general trends of age groups, including Gen Y, Gen X, Baby Boomers, Seniors and Depression Era.

It also gave a quick over view of today's market trends and an overview of future market trends

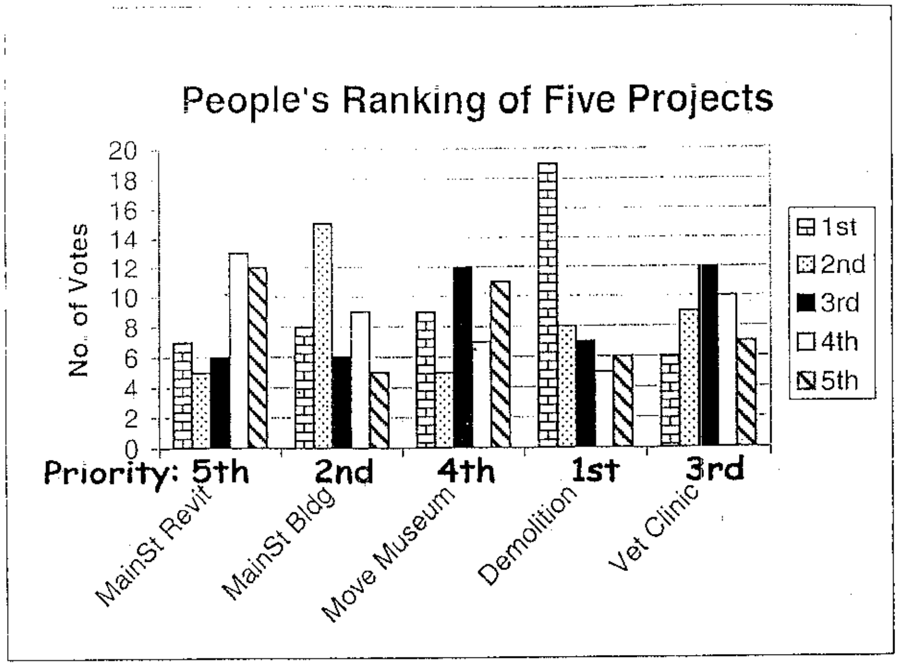
Chuck Kerr, Great Northern Power Development out of Houston, Texas, was the guest speaker for the evening He spoke about the Nelson Creek coal mining project in the ...

Kerr presented information on the work being done to set up a coal mining operation in Nelson Creek. Kerr said there is a vast amount of untapped coal in Montana, particularly in eastern Montana. The coal lignite, which is a lower grade of coal, but it can be used to produce energy Great Northern Power Development has some mining operations in Montana, including the one in Colstrip.

He said that Nelson Creek is a desirable location for them because for one, they already have control of the land and minerals; two, there is adequate resources; and three, it is in a remote location

Kerr said they conducted a five year feasibility study, which showed that it could be done at Nelson Creek

Continued on page 2



The coal mine, once in operation, will generate energy which will be supplied to the Pacific Northwest, who will eventually face a shortage of energy.

Kerr showed diagrams of how the coal would be converted to energy and how it would be transmitted to the Pacific Northwest.

The coal mine operation is planned to be in operation in about 2013 and will be about a billion dollar project from start to finish.

The project would have a great impact on the area. It would employ about 1,200 workers for the mine, creating an additional 600 to 1,000 jobs unrelated to the mine and a $300 to $360 million in taxes paid in.

Kerr said hopefully they can get the faith and support of the communities to make the project a success.

Towards the end of the meeting, those in attendance broke up into five groups, clean-up/domolition, museum move, main street revitalization, main street multi-use building and veterinarian clinic.

For about an hour, the groups discussed the five categories amongst themselves in the group.

In the Main Street revitalization project, the group discussed the architect design completed in 2005 and whether or not the city should move forward with it.

The Main Street multi-use building group talked about the idea of designing a two-story building, with independent living apartments on the top floor and retail outlets on the Main Street level.

In the museum group, they discussed the idea of moving the museum out of the basement of the library to a building up on U.S. Highway 2. They also discussed the cost and fund-raising that would be required to do it.

Under the demolition/clean-up, the group discussed the measures and actions that could be taken to clean-up abandoned sites in Wolf Point.

The veterinarian clinic discussed ideas that could be used to recruit a veterinarian to Wolf Point.

Then meeting then came back together as a whole and presented information that was discussed in each group.

Following the end of the meeting, those in attendance were asked to rank the five projects, from one to five, with one being the most important to five being the least important.

The averages compiled showed that demolition received a 2.33, Main Street building received a 2.68, museum move received a 3.09, veterinarian received a 3.11 and revitalization received a 3.43.

504-21, 504-80

Coal-fired power plant plans continue

Mine permit can take up to three years

By Cindy Mullet
Ranger-Review Staff Writer

Sunday April 9th 2006

"Don't lose heart," was the message Chuck Kerr of Great Northern Power Development of Houston brought during recent meetings with supporters of GNPD's proposal to develop a coal-fired power plant in the Circle area.

While there may not be visible signs of progress on the project, GNPD personnel are working very hard behind the scenes in planning and development, he explained. There are not a lot of people on the ground in eastern Montana, but GNPD has added staff specifically for the eastern Montana project and has a lot of people working on it.

"It all takes time, effort and lots of money," he said.

Air quality issues have been addressed. A lot of computer modeling has been done. The company is confident that its proposed plant will meet Montana's regulations. It is now ready to file for a mine permit, a process which can take up to three years.

While the company completed all the work required to file an air quality permit over a year ago, officials chose to wait to apply for that until they were ready to apply for the mine permit. Since obtaining permits is a lengthy and expensive process, they didn't want to spend the money, receive one permit and then have it expire before the other was granted, he explained.

By waiting and applying for both permits at the same time, they hope to avoid that problem. Technology continues to change and advance so waiting to apply for the air quality permit will also give them a chance to take advantage of any new technology that will make the plant cleaner and that will be less costly.

Along with addressing permit issues, GNPD is still looking for a customer for the power that will be produced by the plant. The company is convinced that the Pacific Northwest is a viable market, and GNPD officials have had good discussions with a number of potential customers but have no firm promise at this time, he said.

That kind of firm commitment from a customer is a critical element of the project. Without it, financing for the mine and power plant will not be possible to obtain, he added.

On his visit to eastern Montana, Kerr said he found people to be extremely supportive of the power plant project. At one public meeting, he recognized that there are always opponents of coal-fired power plants and told people GNPD officials wanted to be sure the people in the area wanted this kind of plant in their back yards.

After the meeting one man came up to Kerr and told him he didn't want the plant in his back yard, he wanted it in his front yard. "I wanted to hug

See **CIRCLE**, page 3

CIRCLE: from page 1

him," Kerr said.

Most local people see this kind of development as a huge benefit for eastern Montana, but there are some people who just don't want to see coal resources developed. "I respect that opinion," he added.

According to the Montana Coal Council web site, Montana leads the nation in coal reserves with 119.3 billion tons followed by Illinois with 104.5, Wyoming with 64 3 and West Virginia with 33 2.

While some of that coal can be mined and transported to other locations, the coal n the area of the proposed GNPD power plant is a lignite coal which cannot be shipped. As a result the power plant must be built at the site of the mine and the electricity generated at the plant transported to where it is needed, Kerr said.

Eastern Montana is awash in this natural resource, but tapping into it is a complicated process. GNPD believes in the viability of the project and will continue working to develop it, he added.

Glendive Ranger-Review

DRWA Meeting Roster

Fairview MT May 2, 2006

Will McCament
Orion Sunsheim
Duane Ullman
Fred R Arndt
Dale Geisen
Renee Torgerson
Willie Danasuk
Terk Terkildsen
Becky Daniels
Lyle Gorham
James W. Hunter
Lonnie Danielson
Rick Swanson
Lois Danielson
Dianne Swanson
Rhoda Hunter
Donald & Jill Herman
Tom & Aneta V. Gable
Pat & Becky Wheeler
Denis Kathan
Jerry & Loretta Vett

5-2-06

Jordan Meeting

NAME	ADDRESS	REPRESENTING
Sheena Hinnaland	Brockway MT	485-2203
Josh Johnson	Sidney MT IEI	433-5617
Lonni Fleck	Sidney, MT IEI	433-5617
Kenny Fogle	Jordan	557-2815
Ellen Saylor	Jordan	[illegible]
Virgil & Carol Hellyer	Jordan	557-2581
[illegible]	Jordan	557-2857
Wayne Hinnaland	Brockway Mt.	485-2203
Rocky Nelson	Jordan, Mt	557-2398
Matt Bliss	Sand Springs MT	557 2489
[illegible]	Jordan	557-9692
Karen & Allen Barnes	Jordan	557-2443
[illegible]	Cohagen	557-6294
[illegible]	Jordan	557-2151
[illegible]	Brusett	557-6181
[illegible]	Jordan	557 06[illegible]
[illegible]	Jordan, Mt	557-2337
James F. Montgomery	Cohagen MT	557-2530
Monty Fitch	Jordan	557-2884
[illegible]	Jordan	[illegible]
Marlene Shawver	Jordan	557-2722
Eric Miller	Jordan	557-2980
[illegible]	JORDAN	557-6210
Dave & Karen Witt	Sand Springs Mt	557-2544
[illegible]	Jordan	557-2224
[illegible]	Jordan	
[illegible]	Brusett, Mt	557-6240
Jack Shawver	Jordan Mt	557-2722
Nathan Saylor	Jordan MT	557-2411
[illegible]	Jordan	557-2215
Jeanne Kirkegaard	Circle	485-2551

2-28-06

interstate engineering, inc

P O. Box 648 Sidney, MT 59270-0648
Phone: 406-433-5617 Fax: 406-433-5618
www.iengi.com

Attendance Roster

Richey Meeting

Dry Redwater Regional Water Authority

Stockman Bank Community Room

Richey, Montana

February 22,2006

	Name	Mailing Address	Telephone Number
1	[illegible]	[illegible]	445-2551
2	[illegible]	[illegible] Richey	773-5111
3	[illegible]	11321 FAS 254 Richey	773-5695
4	[illegible]	Box [illegible] Richey MT	773-[illegible]
5	[illegible]	[illegible], MT	[illegible]
6	[illegible]	[illegible], MT	[illegible]
7	[illegible]	[illegible] MT	[illegible]
8	[illegible]	[illegible]	775-[illegible]
9	[illegible]	[illegible]	773-5857
10	[illegible]	[illegible]	773-5866
11	[illegible]	[illegible] Richey	773-5672
12	[illegible]	[illegible] Richey	773-[illegible]
13	[illegible]	[illegible], Richey	773-5827
14	[illegible]	" " " "	"
15	[illegible]	Box 41 Richey	773-5658
16	MARK UNRUH	311 FAS 254 - Richey	773 5640/5580
17	TERESA UNRUH	311 FAS 254 - Richey	773 5640/5580
18	[illegible]	[illegible] Hwy [illegible]	485 2003
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2-22-06

interstate engineering, inc

P.O. Box 648 Sidney, MT 59270-0648
Phone: 406-433-5617 Fax: 406-433-5618
www.iengi.com

Attendance Roster
Vida Meeting
Dry Redwater Regional Water Authority
Vida School
Vida, Montana
February 21,2006

NAME	ADDRESS	REPRESENTING
Dennis Erickson	Box 21 Vida, mt. 59274	
Jack [illegible]	" [illegible] Vida mt 59274	
Rachel Moore	105 Hwy 201 Vida, Mt 59274	
[illegible] Moore	" " " " " "	
Keith Casterline	28919 Hwy 13 Vida 59274	self
[illegible] Haynie	Box 36 Vida, MT 59274	
Gene Engen	2506 Mt Hwy 13, Circle, mt 59215	
Lynn C. Vaillach	313 L-N Rd Vida, MT 59274	
[illegible]	1230 Prairie [illegible] MT, 59201	
Bernice [illegible]	" " " " "	
Chuck Gen	185 sunrise rd Vida MT 59274	
Tom Kasten		Circle
Sherma Himmelund		Brockway
Jeanne Kirkegard		Circle

2-21-06

interstate engineering, inc

P.O. Box 648 Sidney, MT 59270-0648
Phone: 406-433-5617 Fax: 406-433-5618
www.iengi.com

Attendance Roster

Circle Meeting

Dry Redwater Regional Water Authority

Circle High School Auditorium

Circle, Montana

February 20,2006

	Name	Mailing Address	Telephone Number
1	Wayne [illegible]	2211 Hy 200 [illegible] Brockway	406-485-2203
2	[illegible]		
3	Phil Haglund	136 Spur Brockway	485-2254
4	[illegible]	[illegible]	[illegible]
5	[illegible]	[illegible]	[illegible]
6	[illegible]	534 Circle MT	406-485-2409
7	Sandra [illegible]	[illegible] Circle	485-2195
8	Larry [illegible]	[illegible] Circle	485-2795
9	[illegible]	994 Road 422 Circle	485-2329
10	[illegible]	1915 Horse Creek RD	485-2526
11	[illegible]	PO Box 54 Circle	974-2742
12	Ted Kosten		485-3588
13	Bim Murphy	Box 18 Circle	485-2143
14	[illegible]	" 153 Circle	485-2196
15	[illegible]	[illegible]	485-3614
16	[illegible]	Box 311 Circle	485-3549
17	[illegible]	Box 529 Circle	485-2637
18	[illegible]	[illegible] Circle	485-3692
19	Scott [illegible]	Box 359 Circle	485-2019
20	[illegible]	PO [illegible] Circle	485-3811
21	[illegible]	Box 451	485-2913
22	[illegible]	[illegible] Brockway	485-2160
23	[illegible]	Bx 14 Jordan MT	557-2925
24	[illegible]	" " "	557-2925
25	[illegible]	Box 34 Brockway	485-2436
26	Scott [illegible]	Box 177 Circle	485-2646
27	Bill Brost	HC 77 Brockway	485-2458
28	[illegible]	Box 148 Circle MT	485-3412
29	[illegible]	423 [illegible] Rd Circle	485-2803
30	[illegible]	Box 253 Circle	485-2424
31	[illegible]	PO Box [illegible] Circle	485-[illegible]
32	[illegible]	1109 MT Hwy 253 Brockway	485-2452
33	[illegible]	Box 56, Brockway	485-2274
34	[illegible]	" "	" "
35	[illegible]	Box 31 Circle	-2661
36	[illegible]	[illegible] Hwy [illegible] Brockway	485-2202

2-20-06

Circle Meeting

	Name	Mailing Address	Telephone Number
37	Josh Murphy	Box 33	485 2556
38	Jason Beery	585 Hughes Rd	485-2466
39	D L Larson	313 Bolz RD	485-2441
40	Dave Liese	193 Lost Creek	485-3380
41	[illegible]	452 MT Hwy 200 W	485-3555
42	[illegible]	Brockway	485 2203
43	Mary Ann Gayestad	Circle	485-2349
44	Gerde Markusen	Circle	485 - 2331
45	Carol Markusen	Circle	485-2331
46	Wanda Silverland	Circle	485-2845
47	Karen Haynie	Circle Box 549	485-2590
48	James Clinton	Box 122, Circle MT 59215	485-2095
49	[illegible]	581 Lane Creek Rd	485-2551
50	Ted Crockett	P.O. Box 62 Richey	773-5711
51	Joe Beery	4321 FAS 254 Richey	773-5695
52	Marilyn [illegible]	Box 71 Richey MT	773-5693
53	[illegible]	Broomfield, MT	583-7577
54	Crystal Heath	Richey, MT	773-5504
55	[illegible]	Richey, MT	773-5272
56	Clarice R Beery	PO 249 Richey MT	773-5857
57	Danny Beery	249 RICHEY MT	773-5857
58	[illegible]	207 Royal Ave W	773-5866
59	Lorraine Whitmer	291 Rd 433 Richey	773-5672
60	Floyd Whitmer Jr	291 Rd 433 Richey	773 5672
61	Agnes Sylvester	103 Rd 433, Richey	773-5829
62	[illegible]	" " " "	" "
63	Harold Hoffman	Box 41 Richey	773 5658
64	MARLO UNRUH	3811 FAS 254 - Richey	773-5640/5580
65	TERESA UNRUH	3811 FAS 254 - Richey	773-5640/5684
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These are the Richey Meeting

2-20-06

504-80

interstate engineering, inc

P.O. Box 648 Sidney, MT 59270-0648
Phone: 406-433-5617 Fax: 406-433-5618
www.iengi.com

Attendance Roster

Public Meeting

Town of Circle CDBG/TSEP Project
Wastewater System Improvements
Circle Senior Center
Circle, Montana
February 14,2006

	Name	Mailing Address	Telephone Number
1	Jean Decker	Box 523 - Circle	485-2531
2	Marjorie Kirkegard		
3	Elaine Wittkopp	171 Wittkopp Rd	4853654
4	Jerry Hilstad	Box 193	485-3401
5	Cloey S Scheer	P.O. Box 356	485-2285
6	Ken & Norma [illegible]	Box 153 Circle	485-2196
7	Buster [illegible]	Box 172, Circle	485-2568
8	Joseph W Morin	Box-111 Circle	485-2133
9	Aldo Wolff	1686 Hy 13	485 3394
10	Delno Pawlowski	Box 212	486-3442
11	Rob Schriver	Box 574	485-2542
12	Marge Schriver	" "	485-2542
13	Bob McDonald	" 182	485-2275
14	Kent Larson	Box 125 Circle, Mt	485-2157
15	Donna Larson	Box 125 Circle mt	485-2157
16	Rachel Vudem	Box 161 Circle	485-3646
17	Carol Markuson	Box 140, Circle, Mt	485-2524
18	Clint W. Hay	Box 538, Circle, MT	485-2033
19	Angela Holtsenberg	Box 335 Circle MT	485-2772
20	Diane M Manger	~~Box 407~~ " "	
21	Stan Robbins	Box 407 " "	
22	Nate Robbins	" " " "	
23	Tammy Bock	Box 395 Circle, MT	485-2469
24	Jackie Johnson	Box 135 "	485-2448
25	Anita Lokken	Box 405 "	485-2644
26	Glendora McCrae		
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2-14-06

504-80

interstate engineering, inc

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Phone: 406-433-5617 Fax: 406-433-5618
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Attendance Roster
Lambert Meeting
Dry Redwater Regional Water Authority
Lambert High School Cafeteria
Lambert, Montana
February 6,2006

	Name	Mailing Address	Telephone Number
1	Todd Verschoot	31831 CR 127 Richey	774-3366
2	Tom Verschoot	31061 CR 126 Richey	773-5257
3	Kenny & Linda Sunsden	33580 Hwy 201 Sidney	798-3672
4	Elbert Hill	328 CR 128 Lambert	774-3053
5	Dick Ivarson	Box 520, Circle, MT.	433-2103-126
6	Julie Goss	Box 354 Sidney MT	798-3416
7	Tad Kaste	Circle MT	485-3588
8	Gene Aryas	Box 420 Brockton	774-3458
9	Gene Asbury	31135 CR 143	774-3716
10	Greg Rauschendorfer	31256 Co Rd 143	774-3730
11	T.A. Brown	14163 CoRd 314	774-3485
12	Tom Ferguson	13803 CoRd 330	798-3640
13	Robert Fitts	13420 CR 328	774 3777
14	Grant Watson	Box 112 Lambert	774-3317
15	Russell Thiessen	Box 272 Lambert	774-3702
16	Jeff Johnson	33188 CR134 Sidney	798-3606
17	Ken Hill	Box 106 Lambert	774-3346
18	DWIGHT THIESSEN	33499 CR115 SAVAGE	798-3429
19	Phyllis Ulrickson	Box 253 Lambert	774-3399
20	Andy Carda	13732 Co Rd 318	774-3428
21	Paul Vaira	Lambert	774-3410
22	Pat Vaira	11409 Savage	798-3824
23	Jeff Carda	31571 Hwy 201 Richey	774-3725
24	Audrey HILL	BOX 202	774-3731
25	Melvin Hill	BOX 202	774-3731
26	Ken Torgerson	BOX 132	774 3744
27	Dale Rosaaen		774 3706
28	William C Ulrickson	Box 253 Lambert	774-3399
29	Allen Thiessen	Box 197 "	774-3392
30	Chuck Prevost Skinny Slope Ranch	33247 CoRd 129 Lambert	774-3728 or 774-3344 (Charlie)
31	Sheldon Heringer	PO Box 175 [illegible] Lambert	774-3733
32	Peter Prevost	12690 CTY Rd 337 Lambert	774-3726
33	PATRICK ZEGGAROCHT	404 VIDA E. RD VIDA, MT	525-3525
34	Jon Rod [illegible]	33348 Co. Rd 128 Lambert	774-3713
35	Brian Libow	Box 141 Lambert	774 3353
36	Roger Meyer	BOX 176 Lambert	774 3390

2-6-06

	Name	Mailing Address	Telephone Number
37	Brian Milne	Box 643 Jordan MT	406-437-5617
38	Shirena Hunnaland	2266 MT Hwy 200 W Brockway	406-485-2203
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interstate engineering, inc

P.O. Box 648 Sidney, MT 59270-0648
Phone: 406-433-5617 Fax: 406-433-5618
www.iengi.com

Attendance Roster
Environmental Scoping Meeting
Dry Redwater Regional Water Authority
Circle High School Auditorium
Circle, Montana
December 12, 2005

	Name	Mailing Address	Telephone Number
1	Dean Rogge	HC 68 Box 54 Sand Springs	557-2354
2	Roger Meyer	Box 176 Lambert	774-3390
3	PAT EGGEBRECHT	H04 VIDA E.RD. VIDA	525-3525
4	Tod Kasten	PO Box 520 Circle 59215	485-3588
5	John WhiTEMAN JR	Box 72 Richey	773-5575
6	[illegible]	Box 276 Circle	485-2744
7	[illegible]	PO Box 211 Jordan	557-2601
8	Mike McKEEVER	Box 14 Jordan	557-2905
9	Henry Helgeson	Box 439 Circle	485-2913
10	Neale [illegible]	Box 266 Circle	485-2356
11	[illegible]	P.O. Box 54 Circle	
12	Patti Murphy	Circle, Mt	485-3622
13	Ken M Nelson	Box 545 Circle	485-3440
14	Kim Murphy	Circle, Mt.	485-3622
15	James Clinton	Circle, MT	485-2095
16	David Kaiser	Brockway MT	485-2372
17	Bob McDonald	Circle	485 2275
18	Sheena Hunnaland	2260 MT Hwy 200W Brockway MT	485-2203
19	Chad P O'Connor	Box 97 Jordan	557-2632
20	Jerry Meissner	Box 342 Circle	485-2296
21			
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12-12-05

interstate engineering, inc.

PROJECT DRW PROJECT NO 504-80

SUBJECT Publi information Meeting

BY DATE 9/29/04

CHKD DATE

SHEET OF

Roster of Attendance

Name	telephone
Brian Milne	406-433-5617
Baan Wille	557-2601
Dean Rogge	557-2354
Tod Kasten	485-3588
Rocky Nelson	557-2692
B.G. FitzGerald	557-2740
Mike McKeever	557-2905
Mike Wilson	557-2720
Jeanne Kirkegard	485-2744

9-29-04

Elmdale 2-7-04

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Tod Kasten	Rancher	Circle	485-3374		
Gene Irigoin	Rancher	Lambert	774-3458		
Dick Iversen	NRCS - Farmer	Culbertson	798-7770		
Mike Irigoin	Rancher	Brockton	774-3721		
Don Steppler	Rancher/Co. Comm.	Brockton	787-5895		
Joe Beery	Town of Richey	Richey	773-5695		
Shad Woodell		Richey	773-5880		
Faye Good		Circle	773-5797		
John Whitman Jr.	Town of Richey	Richey	773-5575		
Buck Jordan	Out of Richey	Richey	773-5847		
Dan Ulrich	Farmer Rancher	Bloomfield	583-7585		

2-9-04

Lambert 2-9-04

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Tod Kasten	rancher	Circle	485-3774	Krranches@midrivers	603 MT 200 E
Bill & Phyllis Uhrickson	Teacher	Lambert	774-3399	willeuband@yahoo.com	Box 253 59243
Julie Goss	Richland Cty CD	Sidney	433-2103		HC 89 Box 5165A 59270
Don Steppler	Rich. Co. Comm.	Brockton	787-5895		Box 431, Brockton, MT 59213
Allen Thiessen		Lambert	774-3392	caslrok@midrivers.com	Box 197 Lambert 59243
Grant Watson	Lambert County Sewer and Water District	Lambert	774-3317		Box 112 Lambert MT 59243
Ken Torgerson	RCCD	"	774-3744		Box 132 Lambert 59243
Brian Ligon	LCS+Water district	"	774 3353		Box 141 Lambert MT 59243

2-9-04

1-26-04

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Tod Kasten		Circle	485-3374		
Lynn C. Laubach		Vida	525-3731		
LeRoy RICHARD		VIDA	525-3654		
Don RICHARD		Wolf Point	525-3452		
Rachel Moos		Vida	525-3382		
Jim Moos		Vida	525-3382		

1-26-04

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Ron McFarland	Town of Circle		485-2524	mcfarlan@midrivers.com	PO Box 152
Erin Lutts	Mid-Rivers	Circle	377-7438	elutts@midrivers.com	211 N. Merrill, Glendive
[illegible] Wilde		Jordan	557-2601		PO Box 211, Jordan
Hillary Morrow	GCCD	Jordan	557-2740 EXT 100	hillary.morrow@mt.usda.gov	Po Box 369 Jordan
Bill Enright	Morrison Maierle Inc	Blgs	656-6000	benright@m-m.net	2020 Grand Ave. Blgs 59102
Rick Duncan	Montana DNRC	Helena	444-1879	rduncan@state.mt.us	1625 Eleventh Ave, Hln 59620
MONTY SEALEY	CENT. MT. RC&D	Roundup	323-2755	cmrcd@midrivers.com	PO Box 660 Roundup 59072
Dean Rogge	Garfield Co Conservation District	Jordan	557-2354		HC68 Box 54 Sand Springs MT 59077
Martina Wyse	Dawson Co. CD	Glendive	377-5566	martha.wyse@mt.usda.gov	102 Fir Street FP.
Walter Bornteager	Dawson Co. C.D.	Bloomfield	583-7747		769 Rd 532 Bloomfield Glendive
Bill Sherer	Town of Jordan	Jordan	557-2688	SFE@Midrivers.com	Box 313 Jordan
Mike McKeever	Jordan	Jordan	557 2905	mist@midrivers.com	Box 14 Jordan 59337
Mike Carlson	E. Plains RC&D	Sidney	433-5024	eprcd@midrivers.com	123 W. Main, Sidney 59270
Linda Twitchell	GNDC	W.P.	653-2590	linda@gndc.org	233 Cascade, Wolf Point MT 59201
JEANNE K					
Jerry Anderson					
Tod Kasten					

12-17-03

Vida 12-15-03

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Tod Kasten	Self	Brockway Circle	485-3588		603 MT 200 E
Jeanne Kirkegaard	McCone CD	Circle	485-2744		
Mary Abraham	Self	Vida	525-3682		544 Sheep Creek Rd
Steve Boysun	Self	WP	653-1403		830 4th Ave N W.P
Jean Keaty		W.P.			
Vic R. Shefelbine	Self	W.P.	525-3637		4145 Hwy 13 W.P.
Laura Petrik	Self	W.P.	525-3463	"June"	942 Sunnyside Rd
Donald Klyth	Self	Vida	525-3766		
Lynn C. Laubach	Self	Vida	525-3731		3132-N Road Vida
John H. Lee	Self	Vida	525-3772		
Tom Guldborg	Self	Vida	525-3700		312 Vida West
Jeffrey Hintz	Interstate Engr	Sidney	433-5617		252 W Lane Ave
Gene Engen	Self	Circle	525-3736		2506 MT Hwy 13 Circle MT
Gary McCrea	Self	W.P.	525-3329		502 N. Nickwall Rd
Aron King	Self	W.P.	525-3629		1352 Nickwall Rd
Joe Pilgrim	Self	Poplar	525-3655		1514 Sunnyside, Poplar
Keith Castellino	self & GT Northern	Vida	525-3792		Box 51 Vida
Jarrell Schock	Self	Vida	525-3225		3536 Hwy 13 Wolf Point Mt 59201
Bill Nealy	Self	Vida	525-3533		Box 63 Vida Mt
Bernie Taylor	Self	W.P.	485-2112		1232 Prairie Elk Rd.
Melvin P. Johnson	Self	Vida	525-3756		Box 58 Vida Mt.
Henry Abraham	Self	Vida	525-3682		544 Sheep Creek Rd.
Matt Beery	Self	Vida	773-5721		503 MT Hy 254
Robert Kluth	Self	Vida	525-3784		2888 Mt ~~Hwy~~ 13
Eddie Beery	Beerys Land & Livestock	Vida	773-5710		Vida MT
Mike Carlson	Self	Sidney	433-5028		123 W Main, Sidney

12-15-03

12-15-03

Circle 12-11-63 61

Tod Kasten	603 MT 200 E Circle	485-3588
[illegible] Zahn	Circle [illegible]	485-3463
[illegible]		485-2841
Dennis Wolff	72 Hwy 200W Circle	485-2564
Larry Nagel	Box 387 Circle	485-3488
Neald & Jessie Sekuland	Box 266 Circle	485-2356
Kenneth Schillinger	Box 146 Circle	485-3515
Brian Milne	Box 648 Circle	433-5617
RALPH PACKULAK	MINOT ND	701-852-1886
CLINT JACOBS	CULBERTSON MT	787-5865
Dick Scheetz	Box 603 Circle	485-2817
Eldon Moos	Sidney MT	798-3837
Ron McFarland	Circle MT	485-2416
Dave Kasten	Brockway	485-2272
Joel Haynie	Circle Mt.	485-2957
David Aaseng	PO Box 274 Circle	485-3616
Harry D Haynie	Box 612 Circle	485-2640
Eric Vejtasa	Box 197 Circle	485-3403
Glene Vejtasa	" "	" "
Brandon Curtiss	Circle, MT.	485-2782
Dallas Holland	Circle MT	485 3564
Greg Rolandson	Circle, MT	485-2198
Don Zahn	Circle Mt.	485-3463
Alvin Waller	Circle MT	485-2871
Mary Waller	Circle, MT	485-2871
Henry Helgeson	Circle, MT	485-2913
Burnice Bren	Circle	485 2389
12-11-03 Bill [illegible]	"	" 2077

0

Mary Ann Gaypestad	Circle	485-2349
Helen Gaypesta	Circle	485-2349
Mary "Pat" Murphy	CIRCLE	485-3697
Connie Eissinger	Brockway	485-2274
Coral Reinamer	Circle	485-3483
Elmo Draye	Circle	485-2566
Joan McCabe	Circle	485-3694
Jim McCabe	Circle	485-3694
Ruth Hinnaland	Circle	485-3690
Jerry Meissner	Circle	485-2296
Scott Becker	Circle	485-2646
Wade Nasser	Circle	485 3687
Curt Wittkopp	Circle	485-3552
Ken Kirchner	Circle	485-2244
John Miller	Circle	485-2374
Nels E. Boe	Circle	485-2178
Clint & Shelby Haynie	Circle	485-2033
Gene Markuson	Circle	485-2331
Dennis Murphy	Circle	485 2143
Jeff Murphy	Circle	485 2143
ROY JENSEN	SIDNEY	433-5617
MARK EMERY	SIDNEY	433-5617
Donald Quick	Circle	485-2424
Clint Kirchner	Circle	485-2061
JIM HOWELL	CIRCLE	485-2610
Jeff Hintz	Sidney	433-5617
Doris E Skennum	Circle	485-2593
Ole Rolandson	Circle	485-2145

92-11-03

Greg Nagel	Circle	485-2836
Joe Sokoloski	"	485 3536
Lyle Quick		

12-11-03

40 Jordan 12-4-03

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Tod Kasten	Brockway/Circle		485-3588		
Thomas W. Stanton	Brusett mt		557-2239	tomar@midrivers.com	
Thomas F. Stanton	Cm Ranch Inc Brusett MT		557-2749	Stantons 27 Midrivers.com	
Art Turner		Jordan	557-2255		
Elizabeth Turner	Jordan mt.		557-2255		
Bill Sherer	Jordan	Jordan	557-2689	SFE@MidRivers.Com	
[illegible] Thomas	Jordan		557-2725		
Evelyn Thomas	Jordan		557-2725	Karen	
Hal Taylor	Jordan	Jordan		Taylor 557-2112	
[illegible] Taylor	Ranching	Jordan			HC 62 Box 22A
[illegible]			557 2632		PO 97 [illegible]
[illegible] Taylor	Ranching	Jordan			HC 62 Box 224
Hillary Mau[illegible]	GCCD	Jordan			
Brent McL[illegible]	County Com	Jordan	557-2777		
Daryl Pilkington	Daryl's Taxidermy	Jordan	557-2409		PO Box 162
George FitzGerald		Jordan	557-6200		Box 436
Julie Jordan	Co. Commissioner	Jordan	354-6271		HC 32, Box 4961 Miles City
[illegible]		Jordan	557-6112		
James F. Montgomery		Cohagen	557-2533		P.O. 80 Cohagen MT
[illegible]		Jordan	557-2030		
Rod Coulter	Weed Board Chairman	Brusett	557-6240		Gen Del, Box 59, Brusett, Mt. 59318
John Bilbro		Jordan	557-2322		Box 311
Jeffrey Hintz	Interstate Engr. Inc	Sidney	433-5617	jhintz@ieng1.com	P.O. Box 648 Sidney 59270
Dick Gibson	Retired	Jordan	557-2428		PO. Box 427
[illegible] Sayler		Jordan	557-6137		
[illegible] Sayler		Jordan	557-6137		
Harold [illegible]	Rancher		557 6174		HC 62 Box 13
Ken Padgett		JDN	2257		Box 310
Carl Herbaugh		Jordan	406-2423		Box 110

[illegible] Jordan

Pat Gibb[illegible] Jordan 557-2852

12-4-03

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NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Bob BAUGH	SELF	Jdn	557-2687	No	Bx 435, 59337
Jerri Thomas	Self	Jordan			
John Coldwell	"	"	557-2466	No	
Sandy Bowlay	"	"	— 6210	—	
Clyde Phipps		"	557-2209	fellmans@midrivers	
Robert Gibbs	"		557-6189	Gib@midrivers.com	Box 417 Jordan
PAUL & LINDA KOUNTZ	"	JORDAN	557-2859		Box 354 JORDAN
Jerry Coldwell	Coldwell & Sons	Jordan	557-6138	No	HC62 Box 9 Jordan

12-4-03

11-14-03

NAME	Phone	Email
Ted Kasten	485 3588	Kranches@midrivers.com
Mike Wilson	557-2720	
Bill Sherrer	557-2689	
Cathy Byron	557-2286	ammabyron@hotmail.co
Dean Rogge	557-2354	
Jeffrey Hintz	433-5617	jhintz@iengi.com
Mike McKeever	557-2905	mist@midrivers

11-14-03

10-28-03

NAME	PH#	EMAIL	CO.
Ron McFarland	485-2416	mcfarlan@midrivers.com	McCone
Mike McKeever	557-2905	mist@midrivers.com	Garfield
Clyde Phipps	557-2209	fellmans@midrivers.com	Garfield
[illegible]	557-2632		"
[illegible]	557-2601		Garfield
Al Smith	557-2012	721 Attix	Garfield
Mike Carlson	433-5024	eprcd@midrivers.com	Richland
Bill Sherer	557-2689	SFE@midrivers	Jordan
Hillary Morrow	557-2740 EXT 10	———	Jordan
Jeanne Kirkegard	485-2744 Ext. 190		Circle
Tod Kat[illegible]			
Kent Larson	485-2157		Circle
Jeff Hintz	433-5617	Jhintz@lenqi.com	IEI

10-28-03

10 - 10 - 03

NAME	COMPANY/ORG.	TOWN	PHONE	E-MAIL	ADDRESS
Tod Kasten					
Mike Wilson		Jordan	557-2720	shelby@midrivers.com	
Baan D Wille		Jordan	557-2601	BigskyEO@MR.Com	
Brent Mcrae		Jordan		BHMcrea@MR.Comm	
Dean Rogge		Sand Springs	557-2354		
Hillary Morrow		Jordan	557-2740 Ext 100		
Jeanne Kirkegard		Circle	485-2744 ext.190		
Brian Milde	Int Eng.				
~~10-28-03~~					
~~Tod Kasten~~					

10-10-03

LOCAL WATER PROJECT - 4/2/2003 MEETING

Name	Email	Town/Area	Phone
Tod Kasten	Kranches@midrivers.com	Circle	485-3374
Tim Haffa	haflaran@midrivers.com	Cohagen	557-2732
Clarence Clayton	clarence.clayton@mt.nrcs.usda.gov	Jordan	557-2740
Virgil Hellyer	skpshr@yahoo.com	Jordan	557-2581
Rocky Nelson		Jordan	557-2692
Larry N. Wolf	~~[illegible]~~ laswolf @midrivers.com	Circle	485-2795
Jason B Twitchell	twitchel@midrivers.com	Wolf Point (North McCone)	525-3444
Steve Wonderoas		Vida	525-3641
Kent Larson		Circle	485-2157
Larry Nagel		Circle	485 3438
Evelyn Kondelik	ekon@midrivers.com	Circle	485-3651
Bruce Wright	pinnacle@midrivers.com	Circle	485-2999
Brian Milne	brianm@iengi.com	Sidney	433-5618
Darrel Hornbuckle	darrellh@iengi.com	Jmst	701-252-0234
Troy Jensen	troyj@iengi.com	Sidney	433-5617

Jan-Rae Kirkegaard

Julie Goss

4-2-03

October 1, 2002

Circle MT

Name	Town
Tod Kaster	Circle
Bill Sherer	Jordan
Julie Jordan	Jordan
Jeanne Kalegard	Circle
Regan Kirchner	Circle NRCS
Linda Kountz	Jordan
Paul Kountz	Jordan
Kent Larson	Circle, MT.
Clarence Clayton 557-2232	Jordan
Connie Eisinger	Brockway
Greg Rolandson	Circle
Ron McFarland	Circle
Randy Vogel	Billings
Linda Mitchell	Great Northern Dev. Corp.
Dave Kaster	Brockway
Joyce Schriener	Circle
973-5545 John Whitman Jr.	Richey (Sonny)
Barb Green	Circle
Rick Duncan	State - DNRC

Karen Ivanova

tribcity@sofast.net ~~973-5575~~

James Clare 485-2095

10-1-02

What is the Dry-Redwater Rural Water System?

Water, do you have what you need? The cost of hauling and buying water for household and livestock use can be high and time consuming. We all need good quality and quantity of water to maintain our businesses, communities, health and well being.

A number of people, like the communities of Jordan and Circle, know what it is like to not have good quality and quantity of water. Many of our rural neighbors must haul all of their household water. The town of Circle is concerned that the new well just completed is only a short term patch and that they need a better solution.

A potential long term solution for all our communities is being proposed for our consideration. It is called the DRY-REDWATER Rural Water System? Everyone is encouraged to attend a community meeting to find out more.

This water system will be designed to provide a good quality and quantity of water to as much of the Communities of Garfield and McCone Counties as possible, including, but not limited to Jordan, Circle, Vida, Richey, Lambert, and their surrounding areas.

The water is to be used in residential, commercial, ranch households and livestock watering systems. These types of systems are very possible. There are many rural water systems of this kind designed and operating now in our neighboring states due to poor water conditions such as ours. Federal and State Governments currently pay for the majority of the cost of these systems for a large portion of the US population.

The first step is to determine who all is interested in at least finding out the feasibility of the system and what the costs might be. This effort is being supported by the Town of Jordan, Town of Circle, Garfield County, Garfield County Conservation District, McCone County, McCone Conservation District, and numerous individuals of Garfield and McCone counties.

There is no need for complete commitment to the project at this time. However, it is very important to determine who is potentially interested. This show of interest is vital to help determine the amount of water that must be supplied, the size of the delivery system, the size of the water treatment system, and many other considerations. It is critical to be able to properly size the system, the option to try to become involved after the system coverage area and size is determine will be very difficult. So, please let us know if you are interested.

There is a survey being prepared to be delivered to all of the residents to help us in determining interest in the system and the feasibility effort. Much like the telephone and electric cooperatives, we can have an affordable cooperative water system that will provide good quality and quantity water to our communities and neighbors.

Please attend the Community Meetings or call the the McCone Conservation District at 485-2744 Ext. 190. or Tod Kasten 485-3374
The Dry-Redwater Rural Water System Community meetings are tentatively set for:
-Thursday December 4, 2003 at 6:30 pm. the Jordan Courthouse.
-Thursday December 11, 2003 at 5:00 pm. the Circle High School.
-Monday December 15, 2003 at 6:30 pm. the Vida School.

MCCONE CONSERVATION DISTRICT

Volume 10, Issue 4 Winter 2005

Dry-Redwater Rural Water Project Keeps Moving Forward

By Jeanne Kirkegard

It's hard to believe that October 2002 was the first Dry-Redwater Rural Water Meeting. It has been a little over three years when a group of residents from Garfield and McCone counties sat down at a table and started the process of getting good quality and quantity of water to the rural communities in Garfield, McCone and parts of Richland and Dawson Counties. So here is where we are to date.

In April of 2005 the Dry-Redwater committee legally formed the Dry-Redwater Regional Water Authority. The Dry-Redwater Regional Water Authority is managed by a board of Directors, who represent each owner of the Authority. The Board members are as follows;

Mayor John "Sonny" Whiteman Jr. - Richey

Walter Borntrager - Dawson Co Conservation District

Baan Wille - Jordan

Dean Rogge - Garfield Co Conservation District

Henry Helgeson - Circle

Mike McKeever - Garfield County

Pat Eggebrecht - McCone County

Roger Meyer - Richland Conservation District

Tod Kasten - McCone Conservation District

The board of Directors also voted in the first officers of the organization and adopted the by-laws for the Dry-Redwater Water Authority during the December 12th meeting in Circle. They are as follows.

Mike McKeever - Garfield County - Chairman

Pat Eggebrecht - McCone County - Vice-Chairman

Roger Meyer - Richland Conservation District - Secretary

Tod Kasten - McCone Conservation District – Treasurer

The Board also held a public environmental scoping meeting December 12th 2005 to address any environmental issues. The public has 30 days to comment. Any concerns or comments can be addressed to Brian Milne at Interstate Engineer Inc, Box 648 Sidney, Mt. 59270.

The study is being done in two phases. The first phase of the study is completed

Continue to page 2

Continue from page 1

and we are in the final stage of phase two. A complete financial feasibility and preliminary engineering report will be completed by February 2006.

If you haven't filled out a survey and are interested in good quality water for household, livestock or both, It's not to late to sign up. It is all voluntary and we are not asking for a commitment at this time. It's important to make sure we haven't left anyone out of the project design that is interested in having good water.

Before the final commitment you will know exactly what it will cost you as a rural water user. Once the final commitments for hook-ups are completed you will not be able to sign up at the initial hook-up cost. The cost to the rural user could be 5-10 times higher or you may not be able to sign up at all. Most water projects are 40 years contracts and after the contracts are completed, they can look into expanding or adding new users.

The Dry-Redwater Rural Water project design to date does have three areas that have been set aside due to the lack of interest in that area and aren't feasible. If the areas generate more interest they will be added back into the project.

The rural water project has come a long way, but there are still a lot of questions, concerns and rumors. What is it going to cost? "Will I lose my water rights?" Will I have to plug my wells? "The water belongs to all of us." "It's a good money making project for McCone." Can I sign up after the construction begins?

To answer some of the questions; You will know exactly what it will cost before the final commitment. No, you do not lose your water rights. No, you don't have to plug your wells. The monthly fee that you pay as a water user is for the operation and maintence of the system. McCone County does not benefit from this project expect for an opportunity for residents to receive good quality water.

A rural water system works a lot like our local telephone or rural electric co-op. It is locally owned by the counties of McCone and Garfield, the towns of Circle, Jordan and Richey and the Conservation Districts of McCone, Garfield, Dawson and Richland. Each County, Town and Conservation District in the project area has representation on the Board.

There are numerous benefits to having good quality water

- **Improved quality of life associated with high quality safe drinking water:** Health benefits of good water. More and more harmful chemicals (many carcinagens) are being found in our ground water all the time. Water from the system will meet the same standards as "town" water.

- **Reduction of costs associated with water:** No need to drill or maintain a well. Discontinuing water softening, water treatment, and water hauling. No electrical pumping costs.

- **Fire Protection:** Hydrants could be installed at various places for rapid, water refill for rural fire fighting.

- **Livestock Use:** Backup in case of well failure. Adequate supply due to steady pressure. Increased weigh gains in calves. Possible cost share for delivery to pastures.

- **Spray Use:** Fewer plugged nozzles. Potential reduction in chemical costs as result of increased spray efficiency. The system supplies a current analysis of water quality upon request to assist the user in proper mixing of chemicals. Better mixing of chemicals.

Increased resale value of the user's property: Resale value may increase up to 10% of the property value of the homestead.

So what do you have to lose? There is no commitment at this time. The Dry-Redwater Water Authority just needs to know if you are interested in having GOOD quality water to your home or pasture.

You can contact any one of the representatives in your area or contact your local conservation district for information on the rural water project.

Please attend the public meetings that will take place in February 2006 to learn more about the system, its costs and what the next steps are.

McCone Conservation District
-Box 276
106 10th Street
Circle, Montana 59215
406-485-2744 X 190

Minutes of Regular Meeting

The McCone Conservation Board of Supervisors met on August 13th 2003 at 7:00 PM. In the Conference Room, at the Mid Rivers Building in Circle. Those present: Bruce Wright, Chairman, Evelyn Kondelik, Urban Supervisor, Larry Nagel, Urban Supervisor, Matt Beery, Supervisor, Kenny Kirchner, Supervisor, Jeanne Kirkegard, District Adm. Regan Kirchner, District Conservationist. Dick Scheetz, Soil Conservationist. Visitor's present: Tim Byron, DEQ, Rob Rung, DEQ, Denise Biggar, DNRC-Glasgow, Ann Kulceyk, DNRC-Glasgow, Connie Eissinger, McCone Co. Commissioner, Rep. Dave Kasten, Rick Duncan, DNRC-Helena (Resource Development), Scott Kaiser, DNRC-Miles City, Tod Kasten, Hillary Marrow, Garfield District Adm. And Tim Hafla, Garfield Conservation District, Chairman. Steve Wanderaas, Vice-Chairman and Jason Twitchell, Supervisor were not present. It was determined that there was a quorum, and the board was able to conduct business

Minutes of the July 2, 2003 meeting and the Special Meeting, July 22, 2003 were reviewed. Larry Nagel made a motion to approve the July 2nd minutes and July 22nd minutes. Evelyn Kondelik seconded the motion. Motion carried.
Consent Agenda was reviewed. Evelyn made the motion to approve the consent agenda. Kenny Kirchner seconded the motion. Motion carried.
F.O.Report: Regan Kirchner presented EQIP contracts for Board approval. At this time Chairman, Bruce Wright called Executive Session at 7:15 pm due to the privacy issue. The Board came out of executive session at 7:30 pm. All EQIP contracts were approved. Regan Kirchner asked the board if they would be interested in having a tour next spring, with the PMC plot. Some ideas were to maybe have the tour with a chemical tour, a BBQ that evening and have Larry Holzworth, Plant Material Specialist, from Bridger come. Kirchner explained that the competitive sourcing for the clerical and administrative duties was determined to be left in the government. The technician positions are still in the air, whether government or private sourcing would be best.
Kirchner reported that the Grass Land Reserve Program ends August 1st. 1.1 million was set aside for the program in Montana. Three applied in McCone County for Grass Land Reserve Program

Visitors: Tim Byron from DEQ addressed the board on the TMDL process. Tim explained about preparing the restoration plans for the Lower Missouri. Bryon told the board that a legislative change was made to make sure there is local landowner input in data being collected.
Rob Rung, DEQ addressed the board to let them know that the Redwater River Watershed is a high priority due to the TMDL plans that are to be completed by 2005. Rob also would like the board to start thinking about writing another grant for 2004 for

help with implementing the TMDL plans. There will be a 319 grant workshop in Glendive Sept. 3rd. The first draft will be due October 1st 2003.

Old Business: none

New Business: Rick Duncan from DNRC, Regional Water Systems Coordinator was present at the meeting to let the board know about the $30, 0000 appropriated for a feasibility study for the Dry Redwater Rural Water Project.
Rick had a draft contract to share with the board what was all involved. After reviewing the draft contract, one suggestion was to define the scope of the project better. Other questions arose about the feasibility study An average feasibility study can cost as much as $50,000.00 for engineer firm to complete. Comments were made, There maybe other funding sources other then Bureau of Reclamation Rick Duncan was also checking with Laurie Zeller about rural water project funds. Other questions asked; where will the water come from? Some possibilities were, water from the tribes, water from coal plant, for cooling the coal, if that was to take place Or changing some of the District water reservation for municipal use from the Missouri River. Or a separate permit or application for water from the Fort Peck Lake or Missouri River. An engineer firm could limit some of the oppositions. It was discussed that we need to have someone take the lead on getting this project going Suggestions were to have McCone take the lead because they were centrally located in between Garfield, Dawson and Richland counties. The other concern was getting a steering committee together We need to have input from each district Suggestions were to have a Conservation District Board Supervisor, County Commissioner, member of City Council or the Mayor from each area Other suggestions were to talk to Erin Lutts from Mid Rivers, Mike Carlson from RC&D and local rural water users to see if they would be interested being on a steering committee After lengthy discussion, Evelyn Kondelik made the motion for the McCone Conservation District to take the lead on the feasibility study and to sign the feasibility contract with DNRC. Larry Nagel seconded the motion. Wright, Kondelik and Nagel voted in favor. Beery opposed Kichner abstained Motion carried.

Rick Duncan asked if the Conservation District could have there comments back to him by the 25th of August so that he could have the contract drawn up for the feasibility study for the District to sign

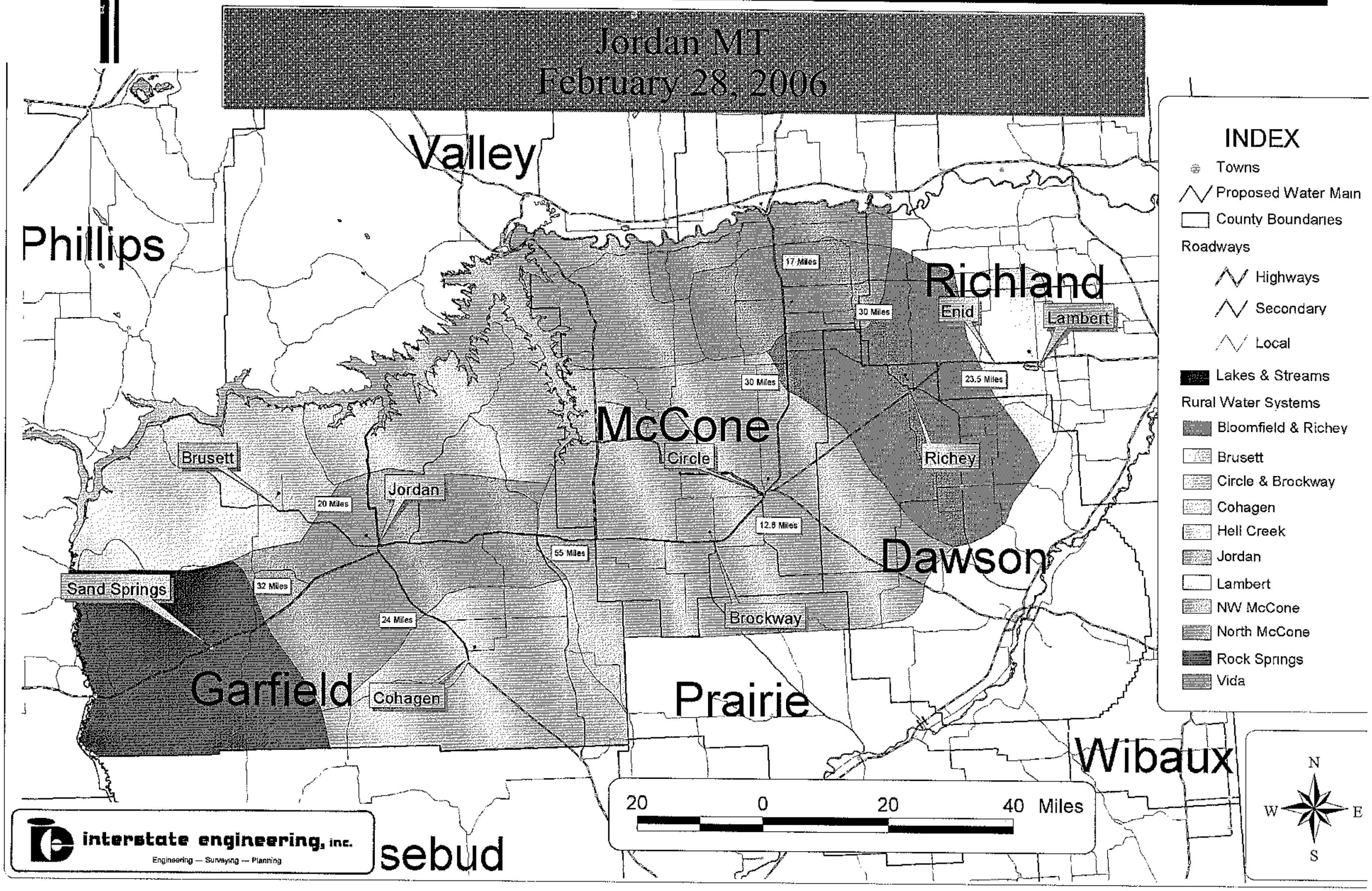
There was no further business. Meeting was adjourned at 10:30 pm

Jeanne Kikegard
Jeanne Kikegard, District Adm

Bruce Wright
Bruce Wright, Chairman

Informational Meeting Dry-Redwater Water Authority

Jordan MT
February 28, 2006



What is the Purpose of the Feasibility Study?

- To establish a geographical area to provide water service to.
- Determine the number of users that are in the service area
- Determine the amount of water needed by the users
- Determine where the water will come from, how much it will cost to treat and deliver to the users
- Perform preliminary pipeline sizing and costs
- Determine the cost of the project based on the best available data
- Determine if the project is financially acceptable to the users
- Provide documentation to the State and Federal Funding Agencies that the project is financially feasible and supported by the users

Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

What is the General Purpose of the DRWA?

- To Own and Operate a Regional Water System
- To Provide Good Quality Water for Households and Livestock in the Coverage Area
- To Provide a minimum flow rate of 5 gallons per minute (gpm) at a minimum of 35 pounds per square inch (psi)
- To Provide for an affordable rate structure

Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Who Governs the DRWA

- An elected Board of Directors from the enrolled entities:
  - Jordan
  - Richey
  - Circle
  - Lambert County Sewer and Water District
  - Dawson County Conservation District
  - Richland County Conservation District
  - McCone County Conservation District
  - Garfield County Conservation District
  - McCone County
  - Garfield County

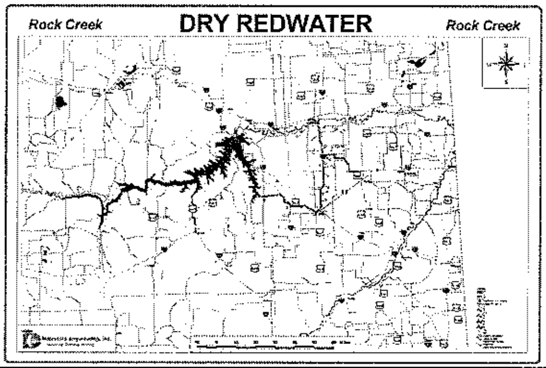
Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Who is the Current Board

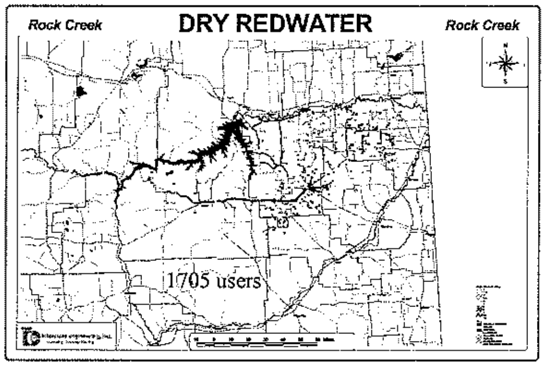
- Mike McKeever Chairman-Garfield County
- Pat Eggebrecht Vice-Chairman-McCone County
- Roger Meyer-Secretary-Richland County Conservation District
- Tod Kasten-Treasurer -McCone County Conservation District
- Mayor John Whiteman-Town of Richey
- Marko Unruh-Dawson County Conservation District
- Baan Wille-Town of Jordan
- Dean Rogge-Garfield County Conservation District
- Harry Helegeson-Town of Circle

Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Initial User signup March 2005



User Sign up as of October 2005



Where will the water come from and how much will we need ?

- Several groundwater and surface water locations were evaluated through out the study area
- The preferred location was a surface water source on the Big Dry Arm
- The system when fully developed will use 229,000,000 gallons in a year which is approximately 700 Acre-feet
- The system will pump a maximum of 900 gpm or 2 cfs
- McCone County Conservation District has a water reservation of 14,299 acre-feet at a maximum delivery rate of 99.5 cfs.
- The District has granted 1874 acre-feet to date leaving 12,425A-F
- The project will use about 5% of the remaining water reservation

Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

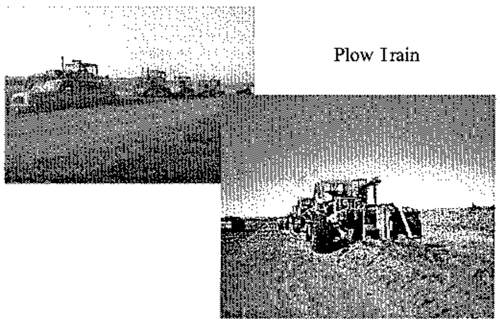
How will the pipeline be installed and will there be storage tanks?

- The pipeline will be installed by several means depending on the size of pipe and the type of terrain
- The pipeline will be buried 6 5 to 7 feet deep
- The service pipeline will be installed as close to the house as possible
- The majority of the pipeline will be PVC
- There will be buried tanks and on ground steel tanks depending on the terrain

Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Methods to install

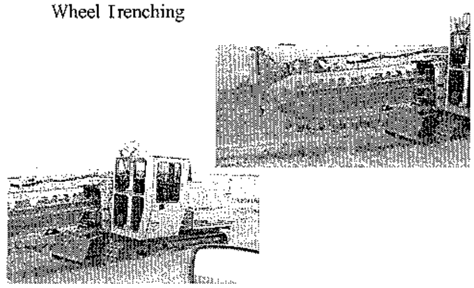
Plow Train



Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Methods to install

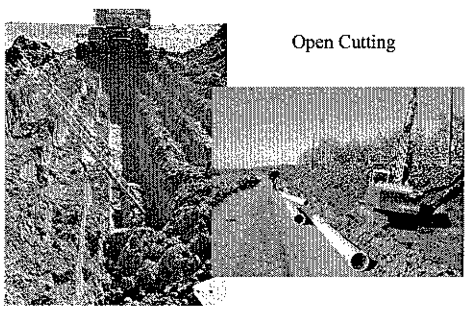
Wheel Trenching



Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Methods to install

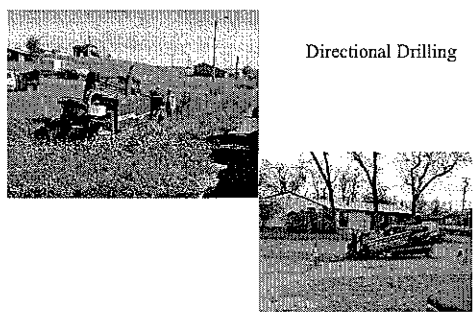
Open Cutting



Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

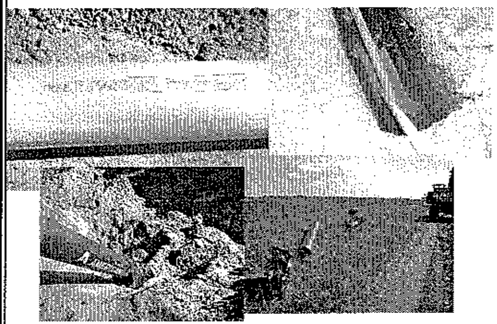
Methods to install

Directional Drilling



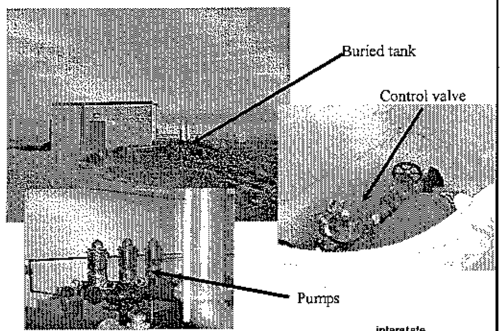
Dry- Redwater Regional Water Authority (DRWA) Interstate engineering, Inc.

Pipe material PVC or Ductile Iron



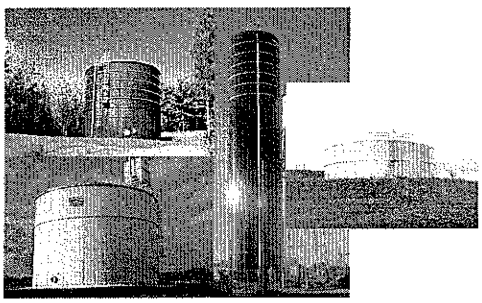
Dry- Redwater Regional Water Authority (DRWA) — Interstate engineering, Inc.

Booster Stations/buried tank/control valves



Dry- Redwater Regional Water Authority (DRWA) — Interstate engineering, Inc.

Types of Storage Tanks



Dry- Redwater Regional Water Authority (DRWA) — Interstate engineering, Inc.

What will it cost to Build?

- The project is estimated to cost $79,397,000 based on 2010 construction
- Typically Rural Water Projects have been funded:
  - 75% Grant from the Federal Government
  - 25% local funds
    - 12 5% State of Montana Grant through the TSEP
    - 12.5% loan to be paid by the users

Dry- Redwater Regional Water Authority (DRWA) — Interstate engineering, Inc.

How much will it Cost Me ?

- The rate is based on the current 1705 signed up users and the 12 5% loan amount.
- The rate will be set by the DRWA Board of Directors.
- A potential Rate schedule is
  - Base rate — $29.00/month
  - Water treatment/booster station O&M — $2 10/1000 gallons
  - Pipeline maintenance(rural and Town) — $1.45/1000 gallons

Example Monthly costs

	5,000 gallons	8,000 gallons
Base charge	$29.00	$29.00
Water Treat/Booster Station	$10.50	$16.80
Pipeline Maintenance	$ 7 25	$11.60
Total Monthly bill	$46 75	$57.40

Dry- Redwater Regional Water Authority (DRWA) — Interstate engineering, Inc.

How much will it Cost for Livestock watering ?

Example Monthly costs

	48,000 gallons 16 gals/head	24,000 gallons 8 gals/head
Base charge	$29.00	$29.00
Water Treat/Booster Station	$100.80	$50.40
Pipeline Maintenance	$ 69.60	$34.80
Total Monthly bill	$199.40	$114.20

Cost Comparisons for stock well costs

Drill and case well $35.00/ft average depth 200-250 ft cost $7,000-$8,750

If a well lasts 15 years the monthly cost is $39.00 to 48.00 per month

Pump and Motor $1,000.00 If a pump lasts 5 years the monthly cost is $16.70

Control pit/pressure tank $2,800 with a 15 years life has a monthly cost of $15.60

Annual stock well electrical rate is $240.00 per year or $20.00/month before electrical use

The cost to run electricity to a new well site is $17,160.00/mile or $3.25/ft

For a new well that already has electric service the monthly costs before any water is pumped is $91.30 to $100.30.

Dry- Redwater Regional Water Authority (DRWA) — Interstate engineering, Inc.

How Conservative are the rates?

- The rates must pay the loan, operate the system, create a loan reserve fund and provide for future replacement funds.
- The reserve funds will build for the beneficial use of the DRWA
- These funds are controlled by the DRWA Board of Directors

Monthly costs Break down

	Operations	Reserves
➢Loan Payment	$26.60	$ 3.00
➢Water Treat/Booster Station	$ 1.53	$ 0.57
➢Pipeline Maintenance	$ 0.84	$ 0.61
➢Total Amounts at 8,000 gal	$ 44.96	$ 12.44
➢Total Amounts at 5,000 gal	$ 37.85	$ 8.90

Dry- Redwater Regional Water Authority (DRWA)   Interstate engineering, inc.

How do the water rates compare with bottled water

- Average cost per gallon of a 5 gallon bottle $0.95/gal.
- Average cost per gallon for 8,000 gallons from DRWA $0.007/gal
- For $57.40 you could buy 60 gallons of bottled water or
- For 57.40 you can get 8,000 gallons of water delivered at a minimum of 5gpm at a minimum of 35 psi to all fixtures in your house.

Dry- Redwater Regional Water Authority (DRWA)   Interstate engineering, inc.

What is the next step?

- Provide funds to be used as matching funds when applying for Federal Assistance
- This is proposed to be funded with a refundable Good Intention Fee in the amount of $100.00 per user
- If a user has multiple hookups it will be $100.00 at this time
- If the user cannot be served or wishes to drop out later the $100 will be refunded.
- If the user is served by the water system the $100.00 fee will be applied to the projected $500.00 hookup fee
- If a potential user does not pay the $100.00 initially the hookup fee could easily be $1000.00 or higher depending on location and other conditions.

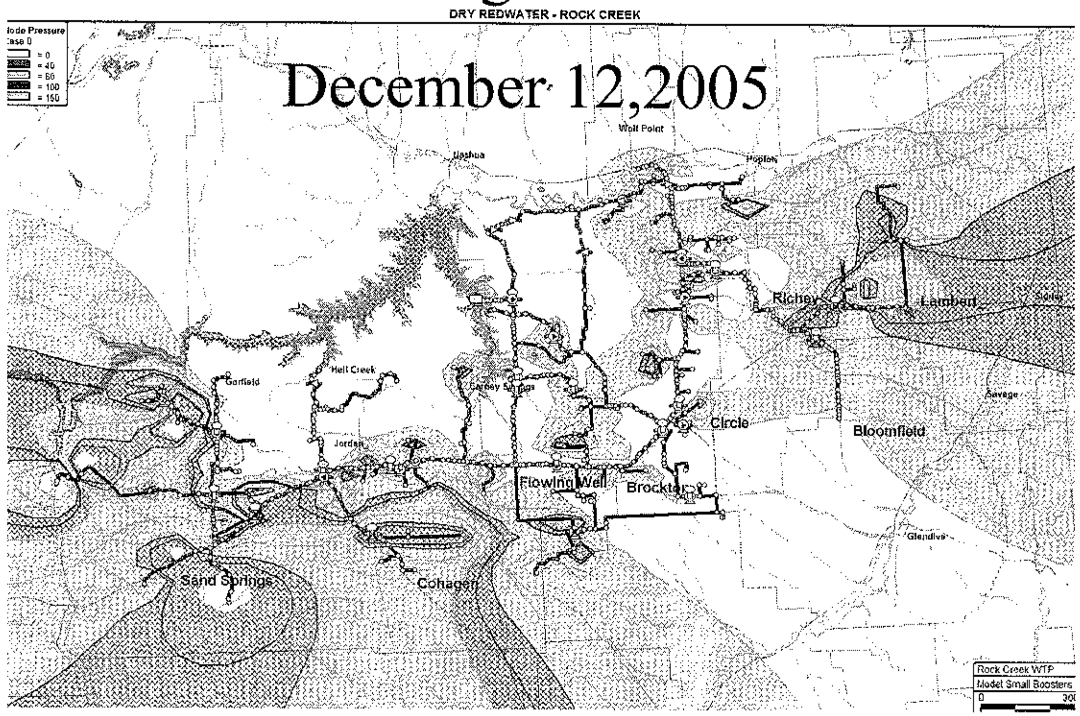
Dry- Redwater Regional Water Authority (DRWA)   Interstate engineering, inc.

Environmental Scoping Meeting

For the

Dry Redwater Rural Water Project

Circle Montana High School Auditorium



December 12,2005

Dry Redwater Rural Water Regional Water Authority

interstate engineering, inc.

What Is MEPA

- ..Montana Environmental Policy Act
- Established in 1971
- Public Process that assures Montana citizens that before a state funded project makes a decision that could affect the human environment that an effort is made to identify those impacts
- Helps insure that a project or process will not adversely impact a persons right to a healthful environment
- Allows public comment and action early on in the planning of a project

Dry Redwater Rural Water Regional Water Authority — interstate engineering, inc.

What is an Environmental Scoping meeting

- First opportunity for public involvement in the MEPA Process.
- Identify potentially significant issues
- Identify issues that are not likely to involve significant impacts
- Identify potential sources of information
- Allow the environmental review to focus on issues, concerns and resources that are considered most important to the area

Dry Redwater Rural Water Regional Water Authority — interstate engineering, inc.

Open Communications

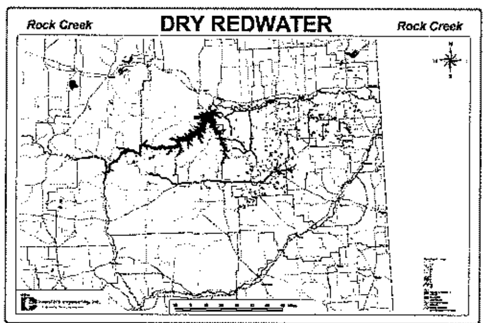
Dry Redwater Rural Water Regional Water Authority — interstate engineering, inc.

What Input for MEPA is needed and why

- Short term impact questions
  - Air quality during construction
  - Surface damage during construction
  - Noise pollution during and after construction
- Long term impact questions
  - Water treatment
  - Waterline maintenance
  - Noise
  - Access roads
- Demographics

Dry Redwater Rural Water Regional Water Authority — interstate engineering, inc.

Project Service Area



Dry Redwater Rural Water Regional Water Authority — interstate engineering, inc.

What will the construction consist of ?

- An intake structure in Fort Peck. This will be a stainless steel screen with an air wash system. The screen will be sized to prevent the intake of fish eggs and small fry.
- A set of earthen ponds to hold water for 45-90 days to allow sediment to settle out. These ponds will be mechanically cleaned every 5 to 10 years. The sediment will be land applied.
- A water treatment facility will use conventional treatment based on pilot studies. The waste stream from the process will be disposed of in accordance to the DEQ requirements.
- The finished water will be disinfected and stored in a concrete clearwell under the water treatment plant. A set of high pressure pumps will pump the water into the distribution system.
- The distribution system will consist of 1" to 12" buried pipeline
- There will be several booster stations and water storage tanks(above ground and buried) long the route.

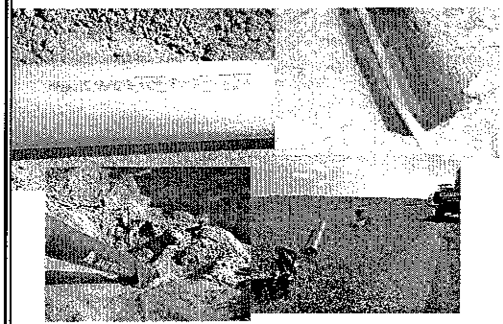
Dry Redwater Rural Water Regional Water Authority — interstate engineering, inc.

Where will the construction occur?

- The pipeline will follow existing right of ways:
  - State Highways
  - County Highways
  - State and Federal land easements
  - Private landowner easements
- The booster station and tank sites will be located at strategic high spots that may need private easements.
- The exact locations have not been finalized but may be adjusted to avoid:
  - Environmentally sensitive areas
  - In ability to obtain private right of way
  - Regulatory restrictions.

Dry Redwater Rural Water Regional Water Authority — Interstate engineering, Inc.

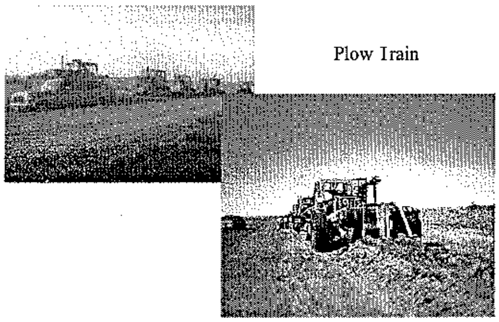
Pipe material PVC or Ductile Iron



Dry Redwater Rural Water Regional Water Authority — Interstate engineering, inc.

Methods to install

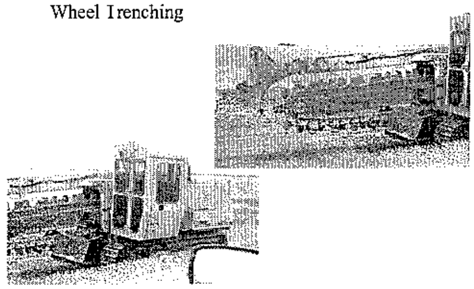
Plow Train



Dry Redwater Rural Water Regional Water Authority — Interstate engineering, inc.

Methods to install

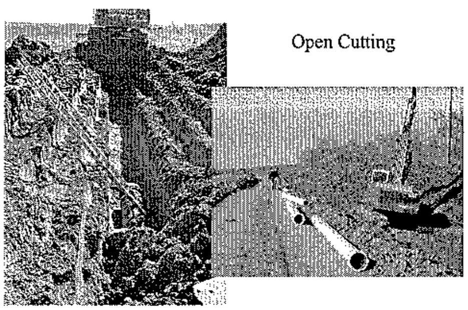
Wheel Trenching



Dry Redwater Rural Water Regional Water Authority — Interstate engineering, inc.

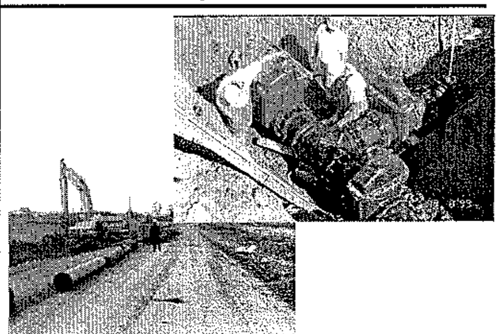
Methods to install

Open Cutting



Dry Redwater Rural Water Regional Water Authority — Interstate engineering, inc.

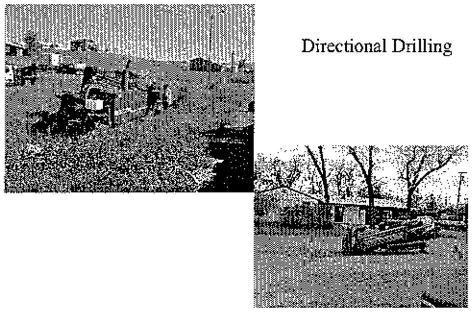
Fittings/Valves



Dry Redwater Rural Water Regional Water Authority — Interstate engineering, inc.

Methods to install

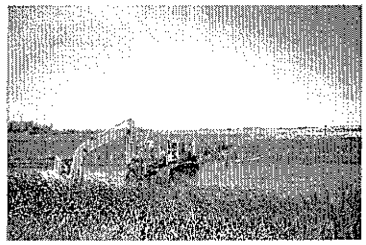
Directional Drilling



Dry Redwater Rural Water Regional Water Authority

Interstate engineering inc.

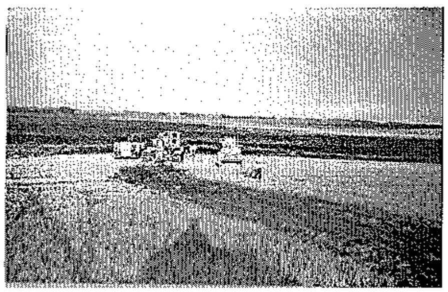
Reason Why we directional drill



Dry Redwater Rural Water Regional Water Authority

Interstate engineering, Inc.

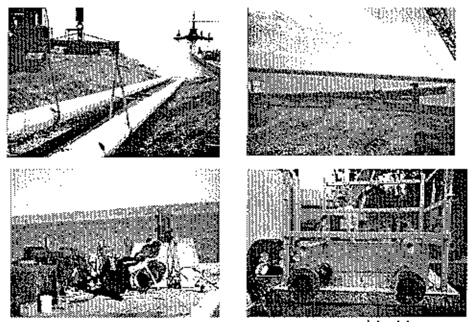
Surface cleanup



Dry Redwater Rural Water Regional Water Authority

Interstate engineering, inc.

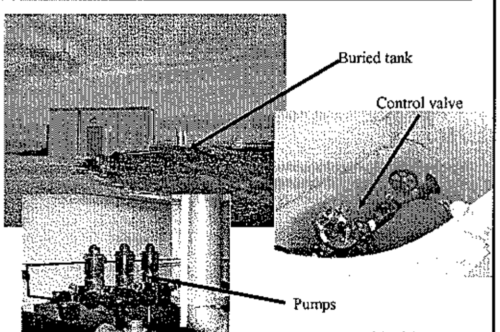
Types of Intake Structures



Dry Redwater Rural Water Regional Water Authority

Interstate engineering Inc.

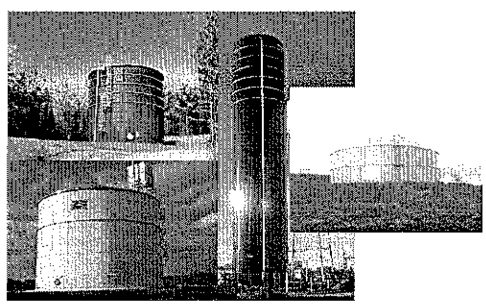
Booster Stations/buried tank/control valves



Dry Redwater Rural Water Regional Water Authority

Interstate engineering, Inc.

Types of Storage Tanks



Dry Redwater Rural Water Regional Water Authority

Interstate engineering, Inc.

Expanding on Communication

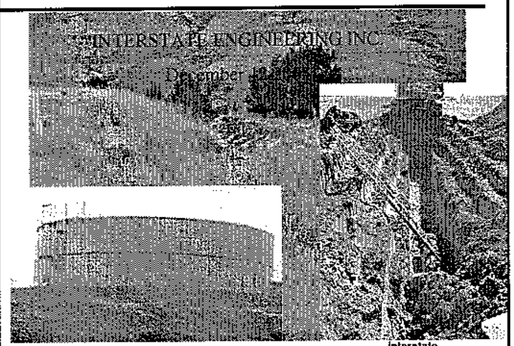
Exchanging Ideas & Knowledge is the Key to Success

- Board Meetings
- Public Forums
- One on One Meetings

Dry Redwater Rural Water Regional Water Authority

interstate engineering, Inc.

Question and Answer Time



Dry Redwater Rural Water Regional Water Authority

interstate engineering, Inc.

Appendix F

Support Letters

Project Correspondence

Great Northern Power Development L.P.
1658 Cole Boulevard • Building No. 6, Suite 260
Golden, CO 80401
(303) 235-8242 • Fax (303) 235-8244

March 18, 2004

Economic Development Administration
Attn: John Rogers
PO Box 578
301 S Park
Helena, MT 59624

RE: Dry-Redwater Rural Water System

Dear Mr. Rogers:

Great Northern Power Development is planning to develop a 500 MW lignite-fired power project and an associated 60 MW wind project in the McCone/Garfield County area. Given the water requirements for our project as well as the local communities from which the project's construction and permanent employees would be drawn, we are supportive of efforts to develop water infrastructure and associated facilities, as current facilities are inadequate for such purposes. Specifically, we are supportive of the proposed rural water infrastructure project known as the Dry-Redwater Rural Water System that we understand would help further develop water supplies for local communities and livestock.

Your consideration and positive action on their request will be appreciated.

Sincerely,

Jerry Vaninetti
by B Houston

G.E. Vaninetti, President
Great Northern Power Development

cc: Mr. Tod Kasten

Rock Creek Marina & Associates, Inc.

President – Roger W Meyer
Vice President – Jerome V (Soda) Maher
Secretary – Clarence M Lala Jr.
Treasurer – Leanne Loucks
Member – Dean Johnson
General Manager -

Marina – (406) 485-2560
652 S Rock Creek Road
Fort Peck, Montana 59223
Correspondence to:
PO Box 883
Glendive, Montana 59330

February 17, 2006

Dry Redwater Water Authority
c/o Brian Milne
Interstate Engineering Inc.
PO Box 648
Sidney, Montana 59330

RE: Potential Commercial Tap.

Rock Creek Marina & Associates, Inc. currently has a Commercial Concession Lease with the US Army Corps of Engineers to provide public recreation at the Marina located on Rock Creek at Fort Peck Lake

We wish to be included in the planning and design of the proposed rural water system for future hook-up and use of domestic water

Currently the existing Marina provides for 22 RV Hookups, a bathhouse, a store/café and 24 permanent trailer homes. These are all being used on a seasonal basis from April thru October. Attached is a map labeled Existing Marina showing the location.

Additionally the lease contemplates the potential relocation of the Marina to another site on the north side of Rock Creek Bay, if feasible, sometime in the future. A preliminary development plan contemplates construction of new assets such as a store, restaurant, public bathhouse, 50 RV hookups and 10 rental cabins along with the possibility of additional, related commercial uses. Attached is a map labeled Future Development indicating it's location

Please find attached a check for $200.00 indicating our commitment to the project. Potable water is a crucial issue in the continued success of the Marina while providing recreation opportunities the public.

Please contact me if you have any questions

Best Regards,

Roger W Meyer
President

MONTANA HISTORICAL SOCIETY

225 North Roberts ✧ P.O. Box 201201 ✧ Helena, MT 59620-1201
✧ (406) 444-2694 ✧ FAX (406) 444-2696 ✧ www.montanahistoricalsociety.org ✧

June 7, 2006

Brian Milne
Interstate Engineering, Inc.
PO Box 648
Sidney MT 59270-0648

RE: DRY REDWATER REGIONAL AUTHORITY, REGIONAL WATER DELIVERY PROJECT (I.E. #S04-80). SHPO Project #: 2006060207

Dear Mr. Milne:

Thank you for the letter regarding the above-cited project. Because of the projects size and the potential for ground disturbing activities we feel that this project has the potential to impact cultural properties.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures that are to be altered are over fifty years old we would recommend that they be recorded and a determination of their eligibility be made.

When the specific pipeline routs, tanks, and water treatment sites have been finalized we would ask that you send us the Township Range and Section, along with a map showing their locations. We will then run a search of our database to determine whether or not sites already exist in the area, and whether a cultural resource inventory will be needed. Thank you for consulting with us.

If you have any further questions or comments you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov.

Sincerely,

Damon Murdo
Cultural Records Manager

File: DEQ/AIR&WATER WASTE MNG/2006

JUN 2006

FILE S04-80

BM ☑ TJ ☐
LF ☐ DZ ☐
JH ☐ DS ☐
JJ ☐ CD ☐
___☐ ___☐

Glendive District Office
503 N River Avenue
PO Box 890
Glendive, MT 59330-0890

June 21, 2006

Brian Milne, P.E., President
Interstate Engineering, Inc.
PO Box 648
Sidney, MT 59270

Subject: Dry Redwater Regional Water Authority

Thank you for the opportunity to review and comment on the proposed Dry Redwater Regional Water system. The Department has the following comments and requests.

The Department requests information stating whether or not Dry Redwater Regional Water Authority is a Public Utility.

The Department would like to be involved early on in the planning stages of this project to avoid any future conflicts with upcoming highway projects. Utility Occupancy Agreements or Encroachment Permits will be required for any planned installations within Highway R/W. Crossings will be required to be encased from R/W to R/W.

If you need further information please call me at 406-345-8227 in Glendive or write me at the above address.

Randy Baldwin

Randy Baldwin
District Utility Agent

copies: District File

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
MONTANA FIELD OFFICE
585 SHEPARD WAY
HELENA, MONTANA 59601
PHONE (406) 449-5225, FAX (406) 449-5339

File: M29 (I)

June 23, 2005

Brian Milne, P.E.
Interstate Engineering, Inc.
P.O. Box 648
Sidney, Montana 59270

Dear Mr. Milne:

This is in response to your letter dated May 30, 2005 requesting information from the U.S. Fish and Wildlife Service (Service) on federally listed threatened and endangered species that may occur in the vicinity of the Dry Redwater Regional Water Authority Regional Water Delivery Project. The potential service area for a regional water delivery system includes Dawson, Garfield, McCone, Prairie and Richland Counties in Montana.

In accordance with section 7(c) of the Act, the Service has determined that the following listed species may be present in Dawson, Garfield, McCone, Prairie and Richland Counties:

County/Scientific Name	Common Name	Status
DAWSON		
Scaphirhynchus albus	Pallid Sturgeon	LE
Sterna antillarum athalassos	Interior Least Tern	LE
Haliaeetus leucocephalus	Bald Eagle	LT
Grus americana	Whooping Crane	LE
GARFIELD		
Scaphirhynchus albus	Pallid Sturgeon	LE
Charadrius melodus	Piping Plover	LT, CH
Sterna antillarum athalassos	Interior Least Tern	LE
Haliaeetus leucocephalus	Bald Eagle	LT
Mustela nigripes	Black-footed Ferret	LE
McCONE		
Scaphirhynchus albus	Pallid Sturgeon	LE
Haliaeetus leucocephalus	Bald Eagle	LT
Charadrius melodus	Piping Plover	LT, CH
Sterna antillarum athalassos	Interior Least Tern	LE
Mustela nigripes	Black-footed Ferret	LE
Grus americana	Whooping Crane	LE
PRAIRIE		
Scaphirhynchus albus	Pallid Sturgeon	LE
Sterna antillarum athalassos	Interior Least Tern	LE
Mustela nigripes	Black-footed Ferret	LE
Haliaeetus leucocephalus	Bald Eagle	LT

County/Scientific Name	Common Name	Status
RICHLAND		
Scaphirhynchus albus	Pallid Sturgeon	LE
Haliaeetus leucocephalus	Bald Eagle	LT
Charadrius melodus	Piping Plover	LT, CH
Sterna antillarum athalassos	Interior Least Tern	LE
Grus americana	Whooping Crane	LE

* LT = Listed Threatened; LE = Listed Endangered; CH = Critical Habitat

The Service is providing this information to assist you in determining possible occurrence of species of federal concern. There may be state species of concern in the vicinity of the project and we recommend contacting the Montana Department of Fish, Wildlife and Parks at 1420 East Sixth Ave., P.O. Box 200701, Helena, MT 59620-0701, 406-444-2535 or the Montana Natural Heritage Program at 1515 East 6th Avenue, Box 201800, Helena, MT 59620-1800, 406-444-5354.

If wetlands may be impacted by this project, Corps of Engineers Section 404 permits may be required. The Service suggests the proposed project be designed to avoid and minimize impacts to any wetland areas, stream channels and surrounding vegetation to the greatest extent possible. Where feasible, minimize the area necessary for construction to reduce direct habitat impacts. The applicant should analyze direct, indirect and cumulative impacts along with future activities required to maintain these improvements.

Section 7(c) of the Act requires federal agencies proposing major construction activities complete a biological assessment to determine the effects of the proposed actions on listed and proposed species. A major construction activity is defined as "a construction project (or other undertaking having similar physical impacts) which is a major federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act" (50 CFR Part 402). If a biological assessment is not required (i.e., all other actions), the federal agency is still required to review their proposed activities to determine whether listed species may be affected. If such a determination is made, formal consultation with the Service is required.

For those actions wherein a biological assessment is required, the assessment should be completed within 180 days of initiation. This time frame can be extended by mutual agreement between the federal agency or its designated non-federal representative and the Service. If an assessment is not initiated within 90 days, this list of threatened and endangered species should be verified with the Service prior to initiation of the assessment. The biological assessment may be undertaken as part of the federal agency's compliance of section 102 of the NEPA and incorporated into the NEPA documents. We recommend that biological assessments include the following:

1. A description of the project.
2. A description of the specific area that may be affected by the action.
3. The current status, habitat use, and behavior of T/E species in the project area.
4. Discussion of the methods used to determine the information in Item 3.

5. An analysis of the affects of the action on listed species and proposed species and their habitats, including an analysis of any cumulative effects.
6. Coordination/mitigation measures that will reduce/eliminate adverse impacts to T/E species.
7. The expected status of T/E species in the future (short and long term) during and after project completion.
8. A determination of "May affect, likely to adversely affect" or "May affect, not likely to adversely affect" for listed species.
9. A determination of "is likely to jeopardize" or "is not likely to jeopardize" for proposed species.
10. Citation of literature and personal contacts used in developing the assessment.

If it is determined a proposed program or project "is likely to adversely affect" any listed species, formal consultation should be initiated with this office. If it is concluded the project "is not likely to adversely affect" listed species, the Service should be asked to review the assessment and concur with the determination of no adverse effect.

A federal agency may designate a non-federal representative to conduct informal consultation or prepare biological assessments. However, the ultimate responsibility for section 7 compliance remains with the federal agency and written notice should be provided to the Service upon such a designation. We recommend federal agencies provide their non-federal representatives with proper guidance and oversight during preparation of biological assessments and evaluation of potential impacts to listed species.

Section 7(d) of the Act requires that the federal agency and permit/license applicant shall not make any irreversible or irretrievable commitment of resources which would preclude the formulation of reasonable and prudent alternatives until consultation on listed species is completed.

The Service appreciates your efforts to incorporate fish and wildlife resource concerns, including threatened and endangered species, into your project planning. If you have questions or comments related to this issue, please contact Katrina Dixon at 406-449-5225, extension 222.

Sincerely,

R. Mark Wilson

R. Mark Wilson
Field Supervisor

24 May 2006

Dry Redwater Association
% Mike McKeever
Box 14
Jordan MT 59337

RE: Water Right Application Process and Timeline for the Dry Redwater Association

Dear Mr. McKeever,

In response to a request for a brief overview of the Water Right application process and an estimated timeline of steps involved, please review the following information.

Acceptance of an application is based on the application containing basic information required by Administrative Rule 36.12.1301. (See attached rules) If this information is not provided, the application will be rejected and returned to the applicant along with any filing fee that accompanied the application. The applicant can resubmit an application with the required information at any time.

There are two basic steps in the application process. In the first step the Department determines if an application contains adequate factual information required to make the application correct and complete per Administrative Rule 36.12.1601. The Department must review permit application within 180 day of receipt for correct and complete. In order to accept an application as correct and complete, it must contain all the information required on the application form. If the application is incomplete, the Department will send a deficiency letter to the applicant stating all the items that need to be addressed. The applicant then has 30 days from the date of the deficiency letter to submit the required information or a request for an extension of time – no more than 15 days, and the date received (priority date) will not be changed. If the information requested is received between 31 and 90 days – the priority date will be reassigned the date the information is received. If the information is not received after 90 days the application will be terminated.

The second step involves the Department assessing the submitted material and that of any objector to determine if the preponderance or the majority of evidence supports the issuance of a permit. This involves weighting all the evidence known to the Department and documenting whether the majority of the evidence supports permit issuance. This assessment will occur regardless of whether an objection has been filed in response the public notice or not. In the end, the Department will decide

whether to deny, grant as requested or grant with conditions needed to assure the permit criteria are met. The estimate time for processing a correct and complete application is 210 days – this includes a 30-day public notice period and 180 days for resolution of any objections to an application.

An estimated time line from the acceptance of an application, including a response to a deficiency letter, is at a minimum, 300 days from the date an application is accepted. With a project the size of Dry Redwater, it is almost impossible to give you a time line that would represent from acceptance of the application to issuance of a permit.

The Department cannot address the feasibility of a possible water right application by the Dry Redwater Association. The Department can only assess, after careful review, whether the evidence submitted with an application supports the issuance of a permit.

Sincerely,

Ann L. Kulczyk
Water Resource Specialist
akulczyk@mt.gov

June 2, 2006

CORPS OF ENGINEERS
John Daggett
Box 208
Fort Peck, Montana 59223

Dear John,

As you may be aware---the Dry-Red Water Authority is completing the feasibility study on a rural water project which includes McCone, Garfield and parts of Richland and Dawson Counties. Our first choice for a water source is on the Big Dry Arm in the Rock Creek/Bear Creek area.

On June 15, 2006 our feasibility study will be completed by Interstate Engineering. We would like to have a meeting with you to discuss our project as well as the possibility of securing the water for it

Any suggestions or assistance as to proceedure for securing the water we need for this project would be most helpful.

We look forward to meeting with you and the other agencies involved in the next few months.

Sincerely,

Mike McKeever, Chairman
Dry-Red Water Authority
Box 14
Jordan, MT. 59337

Appendix G

Effects of Water Quality and Performance of Growing Steers

EPA Water Quality Data

Proceedings, Western Section, American Society of Animal Science

Vol. 53, 2002

EFFECTS OF WATER QUALITY ON PERFORMANCE AND HEALTH OF GROWING STEERS

H. H. Patterson, P. S. Johnson, T. R. Patterson, D. B. Young and R. Haigh

South Dakota State University, Brookings, SD

ABSTRACT: Water available to livestock in western South Dakota is often high in total dissolved solids (TDS) and sulfates. Eighty-one crossbred steers (317 kg) were used to determine the effects of TDS and/or sulfates in water on cattle performance and health. Cattle were stratified by weight and randomly assigned to one of 12 pens (6-7 steers/pen). Pens were randomly assigned to one of four treatments (three pens/treatment) based on supplied water: 1) rural water (RW; 1,019 mg/L TDS; 404 mg/L sulfates, 2) well water (WW; 4,835 mg/L TDS; 3,087 mg/L sulfates), 3) dam water (DW; 6,191 mg/L TDS; 3,947 mg/L sulfates), and 4) DW early switched to 10,000 mg/L TDS water mid-summer (DWS). The DWS treatment was not achieved due to less than predicted TDS in dam water late in the summer, resulting in six pens in the DW treatment (three treatments). Dam water was transported from a local stock dam, and well water was pumped from a well on the research station. From June 20 to September 12, steers were fed a diet of grass hay and wheat middlings (NEg = 0.84 - 0.93 Mcal/kg), and the respective water was hauled into each pen. Water intake was lower ($P < 0.10$) for steers supplied WW (41.3 L/d) and DW (41.0 L/d) than for steers supplied RW (47.4 L/d). Steers supplied RW had higher DMI ($P < 0.10$) and gain/feed ($P < 0.05$) than steers supplied WW or DW. Steers supplied RW also had higher ADG ($P < 0.05$) than steers on WW or DW (0.63, 0.46, and 0.46 kg/day for RW, WW and DW, respectively). The incidence of polioencephalomalacia (PEM) was 15 and 12.5% for WW and DW, respectively, compared to no cases in RW ($P < 0.10$). Three steers died of PEM (one from WW and two from DW). Dietary sulfur concentrations were 0.27, 0.74, and 0.93% of dry matter for RW, WW and DW, respectively. It is unclear whether sulfur alone caused the reductions in performance or if other factors associated with TDS were important. Performance and health did not decline as TDS and sulfates increased above that in the WW treatment, indicating a threshold was achieved. Increased TDS and/or sulfates in the water reduced performance and health of growing steers.

Key words: Steers, Water, Performance, Sulfate, Polioencephalomalacia

Introduction

Water available to beef cattle in South Dakota is often high in total dissolved solids (TDS) and sulfates. Data from the USDA's National Animal Health Monitoring System (APHIS, 2000) showed samples collected in South Dakota feedlots averaged 2000 mg/L TDS and over 1000 mg/L sulfates. Data from our laboratory in 2000 and 2001 showed water samples collected from wells and stock dams in western South Dakota to have TDS as high as 15,000 mg/L and sulfates as high as 10,000 mg/L. The effects of this poor quality water on beef production have not been clearly documented.

Research in Nevada by Weeth and Hunter (1971) found the addition of Na_2SO_4 to heifer drinking water reduced water consumption by 35%, feed consumption by 30%, and caused more weight loss in the heifers compared to controls. In that study, added NaCl to heifer water increased water intake and cattle weight gains. It is unclear whether total salts or specific minerals other than sulfur have substantial roles in reducing animal performance. Sulfur donated to diets from high sulfate drinking water is likely a factor in impaired animal performance, either directly or due to reduced water consumption.

Loneragan et al. (2001) found that increased water sulfate concentration resulted in decreased ADG, feed efficiency, and water intake. Diets greater than 0.2% sulfur have been shown to impair digestion in the rumen of finishing steers (Zinn et al., 1997). High levels of dietary sulfur caused by ingestion of high sulfate water can cause polioencephalomalacia (**PEM**; McAllister et al., 1997). Sulfur induced PEM causes neurological disorder, gastrointestinal stasis, anorexia, blindness, and potentially death.

It is important to determine the effects of water quality on animal performance so that appropriate management practices can be developed. The objective of this study was to evaluate the effects of water from natural sources in western South Dakota that contained various levels of TDS and sulfates on the performance of growing steers during the summer.

Materials and Methods

The study was conducted at South Dakota State University's Cottonwood Range and Livestock Research Station, near Phillip, SD. The experiment was conducted from June 20 to September 12, 2001. The average daily minimum and maximum temperatures during the study period were 15° and 33°C, respectively. Actual minimum and maximum temperatures were 5° and 42°C, respectively. Eighty-one crossbred steers (317 kg) were stratified by weight and randomly assigned to one of 12 pens (six-seven steers/pen). Pens were randomly assigned to one of four treatments (three pens/treatment) based on

Table 1. Total dissolved solids (TDS) and sulfate concentration of water from various sources in western South Dakota in 2001 (mg/L)

	Rural Water		Well Water		Dam Water	
Date	TDS	Sulfate	TDS	Sulfate	TDS	Sulfate
June 20	1048	421	4840	3165	5044	3167
July 17	1008	374	4804	3096	5804	3776
July 30	980	410	4812	3174	5874	3667
August 13	1036	404	4864	3120	6380	4107
August 28	1004	421	4764	3044	6744	4359
September 10	1036	394	4928	2920	7300	4603
Mean	1019	404	4835	3087	6191	3947

the quality of water supplied. Treatments were 1) rural water (**RW**), 2) well water (**WW**), 3) stock dam water (**DW**), and 4) DW early switched to extremely high sulfate DW late in the summer (**DWS**) Due to less than predicted TDS and sulfate in dam water late in the summer, the DWS treatment was not achieved. Therefore, there were six pens in the DW treatment (three total treatments)

The well water was pumped from a well on the research station, and dam water was transported from a local stock dam. The TDS and sulfate concentration the rural water and well water remained consistent throughout the summer, whereas the dam water increased in TDS and sulfates with advancing season (Table 1) Water was supplied in stock tanks to each pen Water intake was measured by the change in daily water depth adjusted for evaporation and precipitation (measurements of evaporation and precipitation taken from a weather station located near the research feedlot) Depth measurements were converted to liters of water consumed using the surface area of each stock tank

Steers were housed in dry-lot pens and fed a diet of grass hay (10.8% CP, 60.9% NDF) and pelleted wheat middlings. From June 20 to July 19, the diet consisted of 61% hay and 39% wheat middlings (DM basis; 14.3% CP, 0.84 Mcal/kg NEg, 0.19% S). Due to poorer-than-predicted performance, the ration was changed to 52.6% grass hay and 47.4% wheat middlings (14.9% CP, 0.93 Mcal/kg NEg, 0.19% S) on July 20, and remained constant throughout the rest of the experiment. No mineral supplement was fed, and salt was offered free choice at all times Rations were fed once daily at 0800. Bunks were managed to be slick just prior to feed delivery, and any orts were weighed and recorded.

Steer weights were taken in the morning on three consecutive days at the beginning and end of the experiment Access to water was denied 12-h prior to weights. At the end of the experiment, all cattle were placed on RW and limit fed a constant amount of diet (approximately 2.0% of BW, DM basis) for 4 d prior to final weights The 2.0% of BW level was chosen since it was less than that consumed by the pen with lowest intake prior to the final 4-d period. Steer ADG was calculated with dead cattle removed Feed efficiency was calculated as ADG divided by average daily DMI. Animal health was monitored daily Cattle were diagnosed with PEM when showing clinical symptoms Necropsies were performed on all mortalities

Steer on-trial weight, off-trial weight, ADG, DMI, feed efficiency, and water intake were analyzed as a completely randomized design in Proc GLM of SAS (SAS Inst. Inc., Cary, NC). Morbidity, mortality, and the incidence of PEM were analyzed with Chi-Square analysis in Proc GENMOD of SAS

Results and Discussion

Steer gains (Table 2) were not as high as expected. Daily high temperatures averaged 32°C in the first 28 d of the experiment, and daily high temperatures reached 42°C by early August Reduced feed intake, panting, and lethargy were noticed on days with high maximum temperatures. The final weights of steers (Table 2) receiving WW and DW were 15 and 16 kg lighter, respectively, than steers receiving RW ($P < 0.05$) Average daily (Table 2) gains were 27% less for WW and DW treatments compared to RW ($P < 0.05$). Water intake (Table 2) was reduced in WW and DW treatments by 6.1 and 5.4 L, respectively, compared to RW ($P < 0.10$). Dry matter intake (Table 2) in WW and DW treatments was 6.2 and 5.0% less, respectively, than RW ($P < 0.10$). Feed efficiency, expressed as gain/feed (Table 2), was increased in RW steers compared to WW and DW ($P < 0.05$). There were no differences between the WW and DW treatments for any of the variables measured ($P > 0.50$)

The reduction in gain and intake with increasing levels of water salinity is similar to that reported by Ray (1989), where gain and feed intake of steers were reduced by approximately 9% when the steers consumed water with 6000 mg/L TDS compared to 1,300 mg/L TDS. Loneragan et al (2001) found linear reductions in ADG and feed efficiency of steers on a corn-based finishing ration when sulfates in water increased from 136 to 2,360 mg/L. Loneragan et al. (2001) found a 4.3 L reduction in water intake when sulfates were 2,360 versus 136 mg/L, but feed intake was not reduced by high sulfate levels Ray (1989) found high saline water to have a greater effect on steers consuming hay than steers consuming hay plus grain The author hypothesized that better adaptation to the high saline water occurred when grain was fed. Working with heifers, Weeth and Capps (1972) found a 12.4% reduction in hay intake when water sulfate levels were increased from 110 to

Table 2 Intake and performance of growing steers supplied water from various sources in western South Dakota in 2001 (Least squares means ± SEM)

Item	Rural Water	Well Water	Dam Water
Observations	3	3	6
Initial wt, kg	318 ± 2	315 ± 2	317 ± 1
Final wt, kg	370 ± 4^{a}	355 ± 4^{b}	356 ± 3^{b}
ADG, kg/d	0.63 ± 0.03^{a}	0.46 ± 0.03^{b}	0.46 ± 0.02^{b}
Water intake, L/d	47.4 ± 1.8^{c}	41.3 ± 1.8^{d}	42.0 ± 1.3^{d}
DMI, kg/d	8.0 ± 0.2^{c}	7.5 ± 0.2^{d}	7.6 ± 0.1^{d}
Gain/Feed	0.078 ± 0.004^{a}	0.061 ± 0.004^{b}	0.061 ± 0.003^{b}

[ab]Within a row, means without a common superscript letter differ, ($P < 0.05$).
[cd]Within a row, means without a common superscript letter differ, ($P < 0.10$).

2,814 mg/L, but water sulfate levels of 1,462 mg/L did not impact intake. In the current study, water sulfate levels of 3,087 reduced DMI, water intake, gain, and feed efficiency compared to 404 mg/L sulfate water, but no further reductions were noticed when steers were supplied water containing 3,947 mg/L sulfates. It appeared that a threshold was reached with the intermediate level of sulfates.

In the current study, there was no morbidity or mortality in the calves receiving RW, but calves on WW and DW experienced 25 and 15% morbidity, respectively (Table 3; $P < 0.05$) Most of the morbidity was associated with PEM, with WW and DW having a greater incidence than RW steers ($P < 0.10$) There were no differences in mortality ($P = 0.40$), but one steer from WW and two steers from DW died of PEM. One steer in the WW treatment experienced urinary calculi and died after termination of this experiment

Daily sulfur intake was a likely cause of the PEM in cattle receiving WW and DW. The NRC (1996) gives the requirement and maximum tolerable level of sulfur to be 0.15 and 0.40% of DM intake, respectively When accounting for sulfur in the water, dietary sulfur was 0.27 , 0.74 , and 0.93% of DM intake for RW, WW and DW, respectively. This resulted in an average intake of 22, 56, and 71 g/d of sulfur for RW, WW, and DW, respectively. Loneragan et al (1998) found dietary levels of 0.9% sulfur (from feed) to be associated with PEM.

Polioencephalomalacia has often been associated with a thiamine deficiency (McDowell, 1989). Recent evidence has shown PEM to be associated with hydrogen sulfide production in the rumen, and not with blood thiamine levels (McAllister et al., 1997; Loneragan et al., 1998) Loneragan et al (1997) concluded that hydrogen sulfide production did not impact the active form of thiamine. In the current study, the first case of PEM occurred within 8 d of experiment initiation, which makes a thiamine deficiency an unlikely cause of the symptoms The last case of PEM in the current study occurred August 28 Most cases of PEM occurred between July 10 and July 20, a period when average daily high temperatures averaged 33°C This period did not record the highest temperatures of the experiment, but it was the first period of sustained high temperatures. Since increased temperature is associated with increased water intake (NRC, 1996), it is not surprising the sulfur toxicity from water would be more likely in periods of hot weather. Similar to this study, McAllister et al. (1997) reported most cases of PEM to be within 15 to 30 d after introduction to high sulfur levels

Implications

Water high in total dissolved solids and (or) sulfates decreased weight gains and feed efficiency of steers on a growing ration Sulfur in the water caused a high rate of polioencephalomalacia Since water in South Dakota is often high in sulfates and other salts, substantial impacts on economic returns likely occur More research is warranted to examine the effects of poor quality water on performance of grazing cattle and to develop economic models to evaluate management alternatives.

Literature Cited

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Table 3. Health of steers supplied water from various sources in western South Dakota in 2001[a]

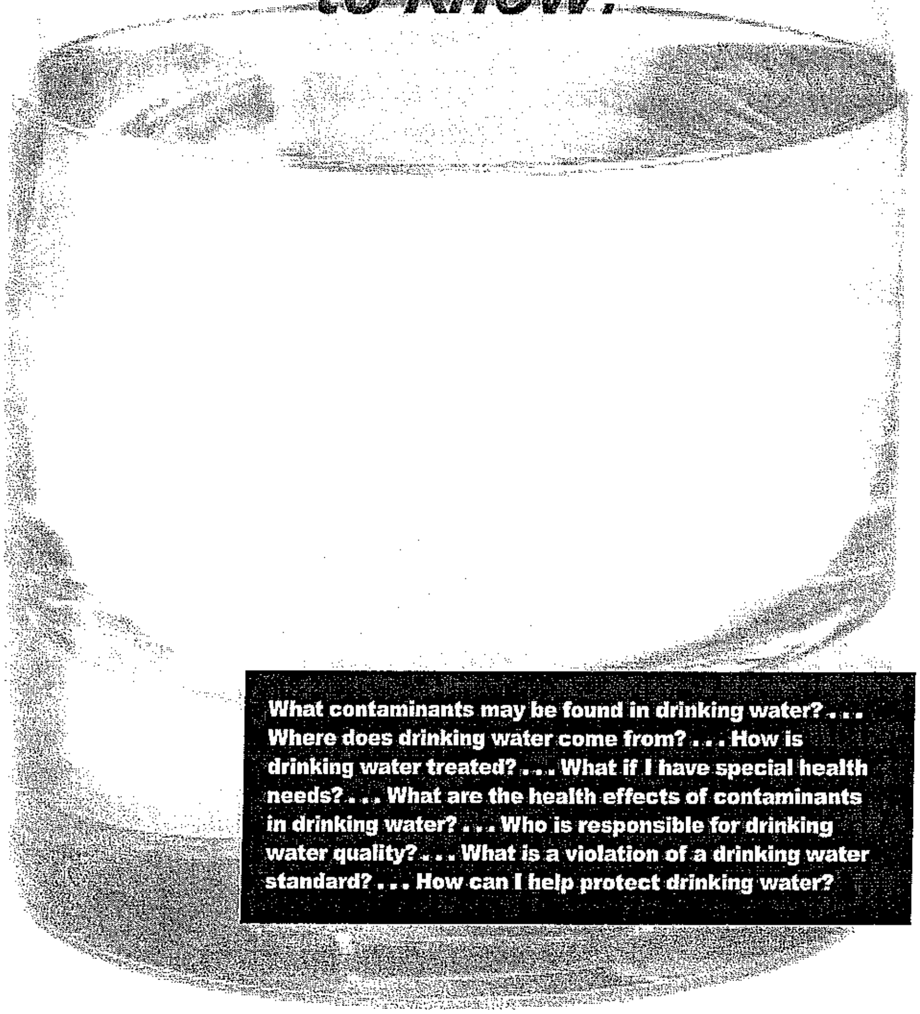
Item	Rural Water	Well Water	Dam Water
Morbidity, %[b]	0 0	25.0	15 0
Mortality, %	0.0	5.0	5.0
Polioencephalomalacia, %[c]	0.0	15.0	12.5

[a]Data analyzed by Chi-Square analysis (observations = 12; events = 81).
[b]$P < 0.05$
[c]$P < 0.10$

United States Environmental Protection Agency
Office of Water (4606) Washington, DC 20460
EPA 816-K-99-001 October 1999

EPA Drinking Water and Health

What You Need to Know!



What contaminants may be found in drinking water? . . . Where does drinking water come from? . . . How is drinking water treated? . . . What if I have special health needs? . . . What are the health effects of contaminants in drinking water? . . . Who is responsible for drinking water quality? . . . What is a violation of a drinking water standard? . . . How can I help protect drinking water?

Introduction

The United States has one of the safest water supplies in the world. However, national statistics don't tell you specifically about the quality and safety of the water coming out of your tap. That's because drinking water quality varies from place to place, depending on the condition of the source water from which it is drawn and the treatment it receives.

Now you have a new way to find information about your drinking water, if it comes from a public water supplier (EPA doesn't regulate private wells, but recommends that well owners have their water tested annually). Starting in 1999, every community water supplier must provide an annual report (sometimes called a consumer confidence report) to its customers. The report provides information on your local drinking water quality, including the water's source, the contaminants found in the water, and how consumers can get involved in protecting drinking water. If you have been looking for specific information about your drinking water, this annual report will provide you with the information you need to begin your investigation.

These annual reports will by necessity be short documents. You may want more information, or have more questions. One place you can go is to your water supplier, who is best equipped to answer questions about your specific water supply. This booklet will help you find other sources of information.

At the end of this booklet there is a postcard with a listing of free publications available from the Environmental Protection Agency about drinking water. To order a publication, please check off the items you would like to receive, and mail the card. For other assistance, please visit **http://www.epa.gov/safewater/** *or contact the Safe Drinking Water Hotline at* **1-800-426-4791**.

What contaminants may be found in drinking water?

There is no such thing as naturally pure water In nature, all water contains some impurities As water flows in streams, sits in lakes, and filters through layers of soil and rock in the ground, it dissolves or absorbs the substances that it touches Some of these substances are harmless In fact, some people prefer mineral water precisely because minerals give it an appealing taste. However, at certain levels, minerals, just like man-made chemicals, are considered contaminants that can make water unpalatable or even unsafe.

Some contaminants come from erosion of natural rock formations Other contaminants are substances discharged from factories, applied to farmlands, or used by consumers in their homes and yards. Sources of contaminants might be in your neighborhood or might be many miles away Your local water quality report tells which contaminants are in your drinking water, the levels at which they were found, and the actual or likely source of each contaminant.

Some ground water systems have established wellhead protection programs to prevent substances from contaminating their wells. Similarly, some surface water systems protect the watershed around their reservoir to prevent contamination Right now, states and water suppliers are working systematically to assess every source of drinking water and to identify potential sources of contaminants This process will help communities to protect their drinking water supplies from contamination, and a summary of the results will be in future water quality reports.

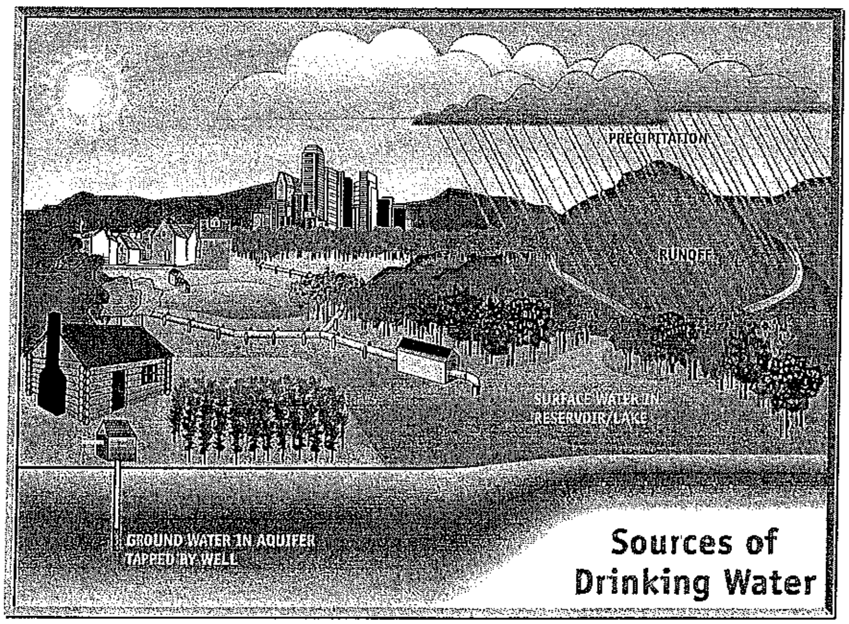
Where does drinking water come from?

A clean, constant supply of drinking water is essential to every community People in large cities frequently drink water that comes from surface water sources, such as lakes, rivers, and reservoirs Sometimes these sources are close to the community. Other times, drinking water

suppliers get their water from sources many miles away. In either case, when you think about where your drinking water comes from, it's important to consider not just the part of the river or lake that you can see, but the entire watershed. The watershed is the land area over which water flows into the river, lake, or reservoir.

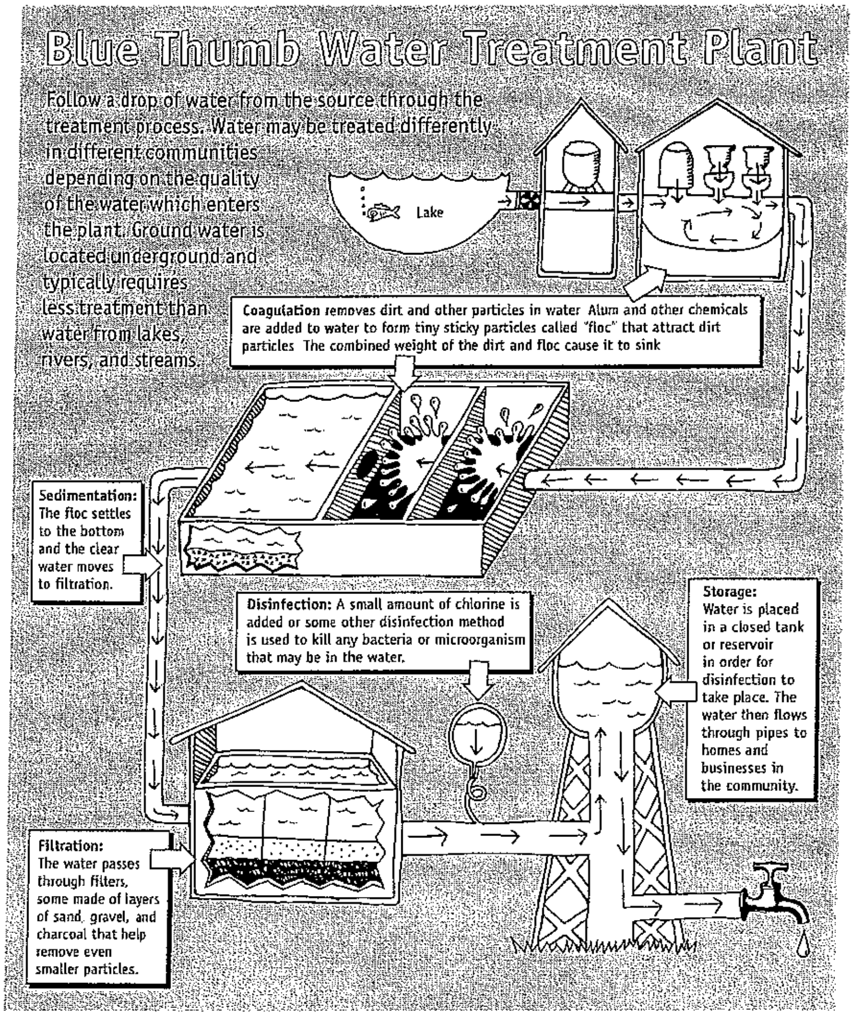
In rural areas, people are more likely to drink ground water that was pumped from a well. These wells tap into aquifers—the natural reservoirs under the earth's surface—that may be only a few miles wide, or may span the borders of many states. As with surface water, it is important to remember that activities many miles away from you may affect the quality of ground water.

Your annual drinking water quality report will tell you where your water supplier gets your water.



How is drinking water treated?

When a water supplier takes untreated water from a river or reservoir, the water often contains dirt and tiny pieces of leaves and other organic matter, as well as trace amounts of certain contaminants. When it gets to the treatment plant, water suppliers often add chemicals called coagulants to the water. These act on the water as it flows very slowly through tanks so that the dirt and other contaminants form clumps that settle to the bottom. Usually, this water then flows through a filter for removal of the smallest contaminants like viruses and *Giardia*.



Most ground water is naturally filtered as it passes through layers of the earth into underground reservoirs known as aquifers Water that suppliers pump from wells generally contains less organic material than surface water and may not need to go through any or all of the treatments described in the previous paragraph The quality of the water will depend on local conditions.

The most common drinking water treatment, considered by many to be one of the most important scientific advances of the 20th century, is disinfection. Most water suppliers add chlorine or another disinfectant to kill bacteria and other germs

Water suppliers use other treatments as needed, according to the quality of their source water. For example, systems whose water is contaminated with organic chemicals can treat their water with activated carbon, which adsorbs or attracts the chemicals dissolved in the water.

What if I have special health needs?

People who have HIV/AIDS, are undergoing chemotherapy, take steroids, or for another reason have a weakened immune system may be more susceptible to microbial contaminants, including *Cryptosporidium*, in drinking water. If you or someone you know fall into one of these categories, talk to your health care provider to find out if you need to take special precautions, such as boiling your water.

Young children are particularly susceptible to the effects of high levels of certain contaminants, including nitrate and lead To avoid exposure to lead, use water from the cold tap for making baby formula, drinking, and cooking, and let the water run for a minute or more if the water hasn't been turned on for six or more hours. If your water supplier alerts you that your water does not meet EPA's standard for nitrates and you have children less than six months old, consult your health care provider. You may want to find an alternate source of water that contains lower levels of nitrates for your child

What are the health effects of contaminants in drinking water?

EPA has set standards for more than 80 contaminants that may occur in drinking water and pose a risk to human health. EPA sets these standards to protect the health of everybody, including vulnerable groups like children. The contaminants fall into two groups according to the health effects that they cause. Your local water supplier will alert you through the local media, direct mail, or other means if there is a potential acute or chronic health effect from compounds in the drinking water. You may want to contact them for additional information specific to your area.

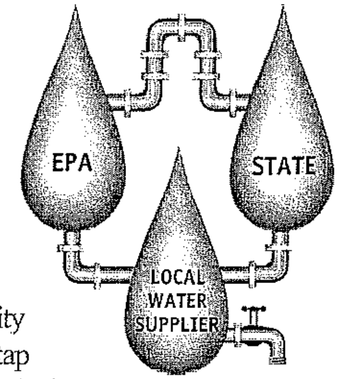
Acute effects occur within hours or days of the time that a person consumes a contaminant. People can suffer acute health effects from almost any contaminant if they are exposed to extraordinarily high levels (as in the case of a spill). In drinking water, microbes, such as bacteria and viruses, are the contaminants with the greatest chance of reaching levels high enough to cause acute health effects. Most people's bodies can fight off these microbial contaminants the way they fight off germs, and these acute contaminants typically don't have permanent effects. Nonetheless, when high enough levels occur, they can make people ill, and can be dangerous or deadly for a person whose immune system is already weak due to HIV/AIDS, chemotherapy, steroid use, or another reason.

Chronic effects occur after people consume a contaminant at levels over EPA's safety standards for many years. The drinking water contaminants that can have chronic effects are chemicals (such as disinfection by-products, solvents, and pesticides), radionuclides (such as radium), and minerals (such as arsenic). Examples of these chronic effects include cancer, liver or kidney problems, or reproductive difficulties.

Who is responsible for drinking water quality?

The Safe Drinking Water Act gives the Environmental Protection Agency (EPA) the responsibility for setting national drinking water standards that protect the health of the 250 million people who get their water from public

water systems Other people get their water from private wells which are not subject to federal regulations Since 1974, EPA has set national standards for over 80 contaminants that may occur in drinking water.



While EPA and state governments set and enforce standards, local governments and private water suppliers have direct responsibility for the quality of the water that flows to your tap Water systems test and treat their water, maintain the distribution systems that deliver water to consumers, and report on their water quality to the state. States and EPA provide technical assistance to water suppliers and can take legal action against systems that fail to provide water that meets state and EPA standards.

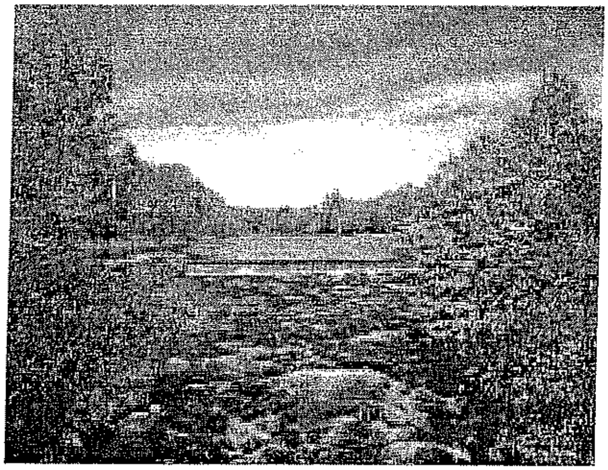
What is a violation of a drinking water standard?

Drinking water suppliers are required to monitor and test their water many times, for many things, before sending it to consumers. These tests determine whether and how the water needs to be treated, as well as the effectiveness of the treatment process. If a water system consistently sends to consumers water that contains a contaminant at a level higher than EPA or state health standards or if the system fails to monitor for a contaminant, the system is violating regulations, and is subject to fines and other penalties

When a water system violates a drinking water regulation, it must notify the people who drink its water about the violation, what it means, and how they should respond In cases where the water presents an immediate health threat, such as when people need to boil water before drinking it, the system must use television, radio, and newspapers to get the word out as quickly as possible. Other notices may be sent by mail, or delivered with the water bill Each water suppliers' annual water quality report must include a summary of all the violations that occurred during the previous year.

How can I help protect drinking water?

Using the new information that is now available about drinking water, citizens can both be aware of the challenges of keeping drinking water safe and take an active role in protecting drinking water. There are lots of ways that individuals can get involved. Some people will help clean up the watershed that is the source of their community's water. Other people might get involved in wellhead protection activities to prevent the contamination of the ground water source that provides water to their community. These people will be able to make use of the information that states and water systems are gathering as they assess their sources of water.



Other people will want to attend public meetings to ensure that the community's need for safe drinking water is considered in making decisions about land use. You may wish to participate as your state and water system make funding decisions. And all consumers can do their part to conserve water and to dispose properly of household chemicals.

For more information, visit
http://www.epa.gov/safewater/

or call the Safe Drinking Water Hotline at
1-800-426-4791

To order a printed copy of any of the following documents:

- o call the Safe Drinking Water Hotline at 800-426-4791 **OR**
- o fill in, cut out, fold, staple, and mail the card below

These are only some of our free publications To learn about others, order our publications catalog, visit our web site, or call our Hotline

Name

Street address *Apt.*

City *State* *Zip*

- o Office of Ground Water and Drinking Water Publications (810-B-99-001)
- o Water on Tap: A Consumer's Guide to the Nation's Drinking Water (815-K-97-002)
- o It's YOUR Drinking Water: Get to Know it and Protect it!: How the right-to-know provisions of the Safe Drinking Water Act can help you learn about and protect your drinking water (810-K-99-002)
- o EPA/CDC Guidance for People with Severely Weakened Immune Systems (816-F-99-005)
- o Lead in Your Drinking Water: Actions You Can Take to Reduce Lead in Your Drinking Water (810-F-93-001)
- o America's Drinking Water in 1997 (816-F-99-001)
- o Safe Drinking Water is in Our Hands: poster (815-F-98-008) and booklet (815-F-98-007) that list the contaminants that EPA regulates
- o Getting Involved in Protecting Your Community's Source of Drinking Water (816-F-97-009)
- o Citizen's Guide to Groundwater Protection (440-6-90-004)
- o Citizen Monitoring: Recommendations to Public Water System Users (570-9-90-005)
- o What You Can Do to Keep Your Drinking Water Safe (570-9-90-500)
- o Underground Injection Wells and Your Drinking Water (813-F-94-001)

Drinking water contaminant fact sheets:

- o Inorganic Chemicals [metals & minerals] (811-F-95-002-C)
- o Synthetic Organic Chemicals [pesticides] (811-F-95-003-C)
- o Volatile Organic Chemicals [industrial chemicals & solvents] (811-F-95-004-C)

fold in half

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STAMP
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US Environmental Protection Agency
Water Resource Center (RC-4100)
401 M St. SW
Washington, DC 20460

United States Environmental Protection Agency | Office of Water (4606) | EPA 816-F-01-010
May 2001
www epa gov/safewater

Stage 1 Disinfectants and Disinfection Byproducts Rule: A Quick Reference Guide

Overview of the Rule

Title	Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR) 63 FR 69390 - 69476, December 16, 1998, Vol 63, No 241 Revisions to the Interim Enhanced Surface Water Treatment Rule (IESWTR), the Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBPR), and Revisions to State Primacy Requirements to Implement the Safe Drinking Water Act (SDWA) Amendments 66 FR 3770, January 16, 2001, Vol 66, No. 29
Purpose	Improve public health protection by reducing exposure to disinfection byproducts. Some disinfectants and disinfection byproducts (DBPs) have been shown to cause cancer and reproductive effects in lab animals and suggested bladder cancer and reproductive effects in humans.
General Description	The Stage 1 DBPR is the first of a staged set of rules that will reduce the allowable levels of DBPs in drinking water. The new rule establishes seven new standards and a treatment technique of enhanced coagulation or enhanced softening to further reduce DBP exposure. The rule is designed to limit capital investments and avoid major shifts in disinfection technologies until additional information is available on the occurrence and health effects of DBPs
Utilities Covered	The Stage 1 DBPR applies to all sizes of community water systems and nontransient noncommunity water systems that add a disinfectant to the drinking water during any part of the treatment process and transient noncommunity water systems that use chlorine dioxide.

Public Health Benefits

Implementation of the Stage 1 DBPR will result in . . .	‣ As many as 140 million people receiving increased protection from DBPs ‣ 24 percent average reduction nationally in trihalomethane levels. ‣ Reduction in exposure to the major DBPs from use of ozone (DBP = bromate) and chlorine dioxide (DBP = chlorite).
Estimated impacts of the Stage 1 DBPR include . . .	‣ National capital costs: $2.3 billion ‣ National total annualized costs to utilities: $684 million ‣ 95 percent of households will incur an increase of less than $1 per month. ‣ 4 percent of households will incur an increase of $1-10 per month. ‣ <1 percent of households will incur an increase of $10-33 per month.

Critical Deadlines and Requirements

For Drinking Water Systems

January 1, 2002	Surface water systems and ground water systems under the direct influence of surface water serving ≥ 10,000 people must comply with the Stage 1 DBPR requirements.
January 1, 2004	Surface water systems and ground water systems under the direct influence of surface water serving < 10,000, and all ground water systems must comply with the Stage 1 DBPR requirements.

For States

December 16, 2000	States submit Stage 1 DBPR primacy revision applications to EPA (triggers interim primacy).
December 16, 2002	Primacy extension deadline - all states with an extension must submit primacy revision applications to EPA.

Regulated Contaminants/Disinfectants

Regulated Contaminants	MCL (mg/L)	MCLG (mg/L)	Regulated Disinfectants	MRDL* (mg/L)	MRDLG* (mg/L)
Total Trihalomethanes (TTHM)	0 080		Chlorine	4 0 as Cl_2	4
Chloroform Bromodichloromethane Dibromochloromethane Bromoform		- zero 0 06 zero			
Five Haloacetic Acids (HAA5)	0.060		Chloramines	4.0 as Cl_2	4
Monochloroacetic acid Dichloroacetic acid Trichloroacetic acid Bromoacetic acid Dibromoacetic acid		- zero 0 3 - -	Chlorine dioxide	0.8	0.8
Bromate (plants that use ozone)	0.010	zero	*Stage 1 DBPR includes maximum residual disinfectant levels (MRDLs) and maximum residual disinfectant level goals (MRDLGs) which are similar to MCLs and MCLGs, but for disinfectants.		
Chlorite (plants that use chlorine dioxide)	1.0	0.8			
Treatment Technique					
Enhanced coagulation/enhanced softening to improve removal of DBP precursors (See Step 1 TOC Table) for systems using conventional filtration treatment.					

Step 1 TOC Table - Required % Removal of TOC

Source Water TOC (mg/L)	Source Water Alkalinity, mg/L as $CaCO_3$		
	0-60	> 60-120	> 120
> 2.0 to 4.0	35.0%	25.0%	15.0%
> 4.0 to 8 0	45.0%	35.0%	25.0%
> 8.0	50.0%	40.0%	30.0%

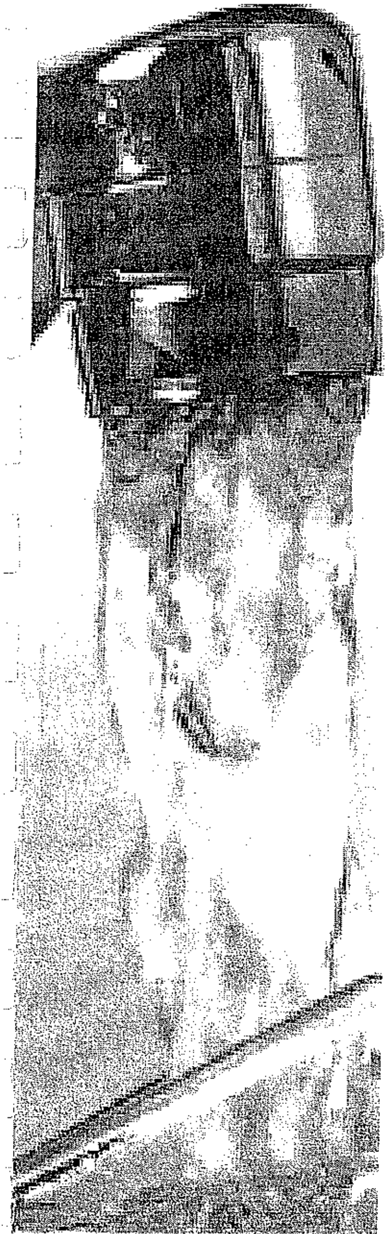
[1] Systems meeting at least one of the alternative compliance criteria in the rule are not required to meet the removals in this table

[2] Systems practicing softening must meet the TOC removal requirements in the last column to the right

Routine Monitoring Requirements

	Coverage	Monitoring Frequency	Compliance
TTHM/HAA5	Surface and ground water under the direct influence of surface water serving ≥ 10,000	4/plant/quarter	Running annual average
	Surface and ground water under the direct influence of surface water serving 500 - 9,999	1/plant/quarter	Running annual average
	Surface and ground water under the direct influence of surface water serving < 500	1/plant/year in month of warmest water temperature**	Running annual average of increased monitoring
	Ground water serving ≥ 10,000	1/plant/quarter	Running annual average
	Ground water serving < 10,000	1/plant/year in month of warmest water temperature**	Running annual average of increased monitoring
Bromate	Ozone plants	Monthly	Running annual average
Chlorite	Chlorine dioxide plants	Daily at entrance to distribution system; monthly in distribution system	Daily/follow-up monitoring
Chlorine dioxide	Chlorine dioxide plants	Daily at entrance to distribution system	Daily/follow-up monitoring
Chlorine/Chloramines	All systems	Same location and frequency as TCR sampling	Running annual average
DBP precursors	Conventional filtration	Monthly for total organic carbon and alkalinity	Running annual average

** System must increase monitoring to 1 sample per plant per quarter if an MCL is exceeded.



For additional information on the Stage 1 DBPR

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA web site at www.epa.gov/safewater; or contact your State drinking water representative.

Additional material is available at www.epa.gov/safewater/mdbp/implement.html.

EPA
United States
Environmental Protection
Agency

Consumer Confidence Report Rule: A Quick Reference Guide

Overview of the Rule

Title	Consumer Confidence Report (CCR) Rule, 40 CFR, Part 141, Subpart O.
Purpose	Improve public health protection by providing educational material to allow consumers to make educated decisions regarding any potential health risks pertaining to the quality, treatment, and management of their drinking water supply.
General Description	The CCR Rule requires all community water systems to prepare and distribute a brief annual water quality report summarizing information regarding source, any detected contaminants, compliance, and educational information.
Utilities Covered	Community water systems (CWSs), all size categories.

Public Health Related Benefits

Implementation of the CCR Rule will result in . . .	‣ Increased consumer knowledge of drinking water quality, sources, susceptibility, treatment, and drinking water supply management. ‣ Increased awareness of consumers to potential health risks, so they may make informed decisions to reduce those risks, including taking steps toward protecting their water supply. ‣ Increased dialogue with drinking water utilities and increased understanding of consumers to take steps toward active participation in decisions that affect public health.

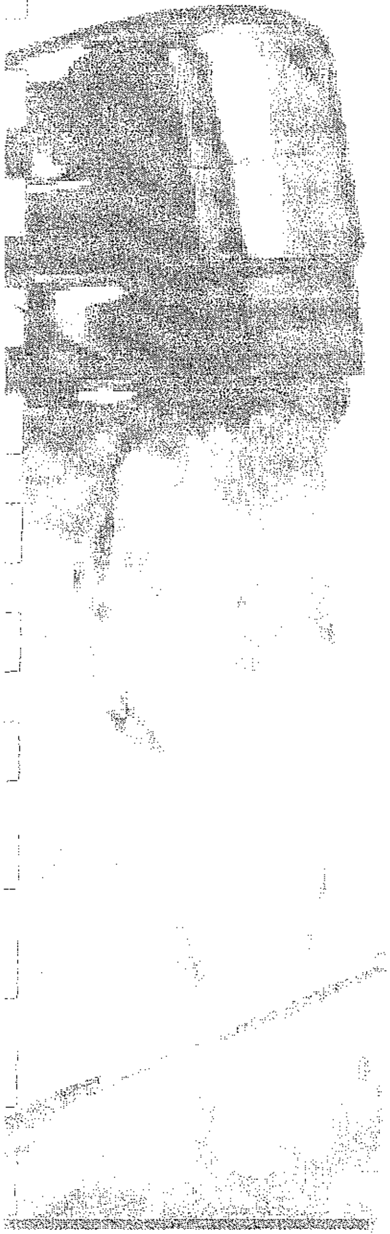
Annual Requirements

CWSs with 15 or more connections or serving at least 25 year round residents must prepare and distribute a CCR to all billing units or service connections.	‣ *April 1* - Deadline for CWS that sells water to another CWS to deliver the information necessary for the buyer CWS to prepare their CCR (req. outlined in 40 CFR 141.152). ‣ *July 1* - Deadline for annual distribution of CCR to customers and State or local primacy agency for report covering January 1 - December 31 of previous calendar year. ‣ *October 1* - (or 90 days after distribution of CCR to customers, whichever is first) - Deadline for annual submission of proof of distribution to State or local primacy agency. ‣ A system serving 100,000 or more persons must also post its current year's report on a publicly accessible site on the Internet. Many systems choose to post their reports at the following EPA website http://yosemite.epa.gov/ogwdw/ccr.nsf/america. ‣ All systems must make copies of the report available on request.

Small Water System Flexibility

- With the permission of the Governor of a State (or designee), or where the tribe has primacy, in lieu of mailing, systems serving fewer than 10,000 persons may publish their CCR in a local newspaper.*
- With the permission of the Governor of a State (or designee), or where the tribe has primacy, in lieu of mailing and/or publication, systems serving 500 or fewer persons may provide a notice stating the report is available on request.*

*Questions regarding whether the necessary permission has been granted should be addressed to the local State or primacy agency



For additional Information on the CCR Rule

:all the Safe Drinking Water Hotline 1-800-426-4791; visit the EPA ebsite at www epa.gov/safewater/ cr1 html; log onto the CCRiWriter rebsite to use EPA's template at ww CCRiWriter com; view 40 FR 141 subpart O; or contact your tate or local primacy agency's rinking water representative

Major Provisions to be Included in the CCR

Water System Information	
	Name/phone number of contact person.
	Information on public participation opportunities (time and place for meetings or hearings).
	Information for non-English speaking populations (if applicable).
Source of Water	
	Type (ex. groundwater or surface water), commonly used name, and location of water sources (ex. Potomac River, Snake River Plain Aquifer, etc.) (Exact locations/coordinates of wells and intakes should not be included for security reasons.)
	Availability of source water assessment.
	Brief summary on potential sources of contamination (if available).
Definitions	
	Maximum Contaminant Level (MCL)
	Maximum Contaminant Level Goal (MCLG).
	Treatment Technique (TT) (if applicable).
	Maximum Residual Disinfectant Level (MRDL) (if applicable).
	Maximum Residual Disinfectant Level Goal (MRDLG) (if applicable)
	Action Level (AL) (if applicable).
	Variances and Exemptions (if applicable).
Detected Contaminants	
	Table summarizing data on detected regulated and unregulated contaminants that were detected during the last round of sampling.
	Known or likely source of each detected contaminant.
	Health effects language for any violations, exceedances or when Arsenic levels are > 0.01 mg/L or ≤ 0.05 mg/L.
	Information on *Cryptosporidium*, Radon, and other contaminants (if applicable).
Compliance with Drinking Water Regulations	
	Explanation of violations, length of violations, potential health effects, and steps taken to correct the violations.
	Explanation of variance/exemption (if applicable).
Required Educational Information	
	Explanation of contaminants and their presence in drinking water including bottled water.
	Warning for vulnerable or immunocompromised populations about *Cryptosporidium*.
	Informational statements on arsenic, nitrate, lead, and TTHM (if applicable).
	EPA's Safe Drinking Water Hotline Number of (1-800-426-4791)

Proposed Ground Water Rule

Summary

EPA proposed the Ground Water Rule (GWR) on May 10, 2000 (65 *Federal Register* 30194) The purpose of the rule is to establish a multiple-barrier approach to protect against waterborne pathogens in drinking water from ground water sources

Background

The 1996 Amendments to the Safe Drinking Water Act require EPA to develop regulations that require disinfection of ground water systems "as necessary" to protect the public health (§§1412(b)(8)).

Ground water occurrence studies and recent outbreak data shows pathogenic viruses and bacteria occur in public water systems that serve ground water and that people become ill, and some may die,due to exposure to contaminated ground water.

Most cases of waterborne disease are characterized by gastrointestinal symptoms (diarrhea, vomiting, etc.) that are frequently self-limiting in healthy individuals and rarely require medical treatment. However, these same symptoms are much more serious and can be fatal for persons in sensitive subpopulations (such as, young children, elderly and persons with compromised immune systems)

EPA does not believe all ground water systems are fecally contaminated; data indicate that only a small percentage of ground water systems at risk of microbial fecal contamination However, the severity of health impacts and the number of people potentially exposed to microbial pathogens in ground water indicate that a regulatory response is warranted

About this Regulation

The GWR will apply to public water systems that serve ground water. The rule also applies to any system that mixes surface and ground water if the ground water is added directly to the distribution system and provided to consumers without treatment.

Proposed Requirements The proposed targeted, risk-based strategy addresses risks through a multiple-barrier approach that relies on five major components:

1. Periodic sanitary surveys of systems requiring the evaluation of eight elements and the identification of significant deficiencies;

2. Hydrogeologic sensitivity assessments to identify wells sensitive to microbial fecal contamination;

3 Source water monitoring to test for the presence of *E coli*, enterococci, or coliphage in the sample There are two monitoring provisions:

-*Routine monitoring* for systems that do not provide 4-log treatment (inactivation or removal of viruses) and draw water from sensitive wells
-*Triggered monitoring* for systems that do not provide 4-log treatment and have a total-coliform positive sample under Total Coliform Rule.

4. Corrective action is required for any system with a significant deficiency or source water fecal contamination The system must implement one or more of the following correction action options:

-correct the significant deficiency,
-eliminate the source of contamination,
-provide an alternate source of water, or
-provide treatment which achieves at 4-log inactivation or removal of viruses.

5 Compliance monitoring to ensure treatment technology reliably achieves 4-log inactivation or removal of viruses.

Environmental and Public Health Benefits

The GWR will reduce public health risk from contaminated ground water drinking water sources, especially in high risk or high priority systems. The proposed GWR is estimated to reduce the number of waterborne viral illnesses by just over 96,300 illnesses each year from the current baseline estimate of approximately 168,000 (a 57 percent reduction in total illnesses). It is also estimated to reduce the number of deaths that result from waterborne illness by about nine each year.

Cost of the Regulation

The GWR will result in increased costs to public water systems and States. The mean annualized present value national compliance costs of the proposed GWR are estimated to range from approximately $177 0 to $188 4 million (using a three percent discount rate). Public water systems will bear approximately 89% of this total cost ($156 4 to $167.9 million), with States incurring the remaining 11% ($20 6 to $20 6 million). The average annual household cost is estimated to be $2.67 for all public and private CWSs, and $3.86 for all public and private CWSs taking corrective action or fixing significant defects

How to Get Additional Information

For general information on the GWR, please contact the Safe Drinking Water Hotline, at (800) 426-4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding Federal holidays, from 9:00 am to 5:00 p m. Eastern Time For copies of the Federal Register notice of the proposed regulation or technical fact sheets, visit EPA's Safewater website

Appendix H

Good Intention Fee Hook-Up Summary (6-8-06)

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06/08/06
Accrual Basis

Dry-Redwater Reg. Water Authority
Good Intention Fee Hookup/customer
January 1 through June 8, 2006

Type	Date	Num	Name	Memo	Split	Amount
Contributions Income						
Good Intention Fee						
Deposit	2/23/2006	5533	D & E Farms Inc	Good Intentio.	Good Intention...	100.00
Deposit	2/23/2006	405	Hisdahl George & Iris	Good Intentio.	Good Intention...	100.00
Deposit	2/23/2006	3401	Larson, Don L.	Good Intentio	Good Intention	100.00
Deposit	2/23/2006	5042	Hance, Flint & Jana	Good Intentio.	Good Intention...	100.00
Deposit	2/23/2006	6548	Fisher, Eugene & Peg	Good Intentio....	Good Intention...	100.00
Deposit	2/23/2006	2530	Rauschendorfer, Gr...	Good Intentio...	Good Intention.	100.00
Deposit	2/23/2006	09973	Simonsen Kenny & ...	Good Intentio.	Good Intention.	100.00
Deposit	2/23/2006	6126	Ulrickson, William &...	Good Intentio...	Good Intention...	100.00
Deposit	2/23/2006	8034	Hill, Melvin & Audrey	Good Intentio.	Good Intention...	100.00
Deposit	2/23/2006	1417	Mondalin Inc (J. Re...	Good Intentio...	Good Intention...	100.00
Deposit	2/23/2006	3969	Thiessen, Dwight	Good Intentio...	Good Intention...	100.00
Deposit	2/23/2006	15157	Torgerson Kenneth	Good Intentio	Good Intention...	100.00
Deposit	2/23/2006	3253	Waller, Leo	Good Intentio	Good Intention	100.00
Deposit	2/23/2006	4021	Lobdell, Larry	Good Intentio.	Good Intention	100.00
Deposit	2/23/2006	9492	Mahlstedt Ranch Inc	Good Intentio.	Good Intention.	100.00
Deposit	2/23/2006	2147	Beery, Danny & Cla.	Good Intentio.	Good Intention	100.00
Deposit	2/23/2006	1681	Haglund, Phil	Good Intentio...	Good Intention.	100.00
Deposit	3/2/2006	14138	Clauson, Nicholas	Good Intentio	Good Intention	100.00
Deposit	3/2/2006	5230	Rock Creek Marina	Good Intentio	Good Intention.	200.00
Deposit	3/2/2006	1709	Miller, Eric	Good Intentio.	Good Intention	100.00
Deposit	3/2/2006	5680	Rogge, Dean	Good Intentio.	Good Intention	100.00
Deposit	3/2/2006	12386	McKeever Mike & ...	Good Intentio	Good Intention.	100.00
Deposit	3/2/2006	4843	IOU Ranch (David ..	Good Intentio.	Good Intention...	100.00
Deposit	3/2/2006	6693	Phipps, Tim & Dana	Good Intentio .	Good Intention...	100.00
Deposit	3/2/2006	6066	Montgomery, Jame.	Good Intentio...	Good Intention	100.00
Deposit	3/2/2006	11115	Coulter, Rod & Lorri	Good Intentio.	Good Intention...	150.00
Deposit	3/2/2006	9464	C/A Weeding & Sons	Good Intentio.	Good Intention .	100.00
Deposit	3/2/2006	4842	Clark, Alvin	Good Intentio	Good Intention ..	100.00
Deposit	3/2/2006	11414	Fogle, Kenneth	Good Intentio...	Good Intention	100.00
Deposit	3/2/2006	1525	Buechler, Kenneth ..	Good Intentio...	Good Intention .	100.00
Deposit	3/2/2006	715	Clay Butte Land Corp	Good Intentio...	Good Intention ..	100.00
Deposit	3/2/2006	2393	Wolff Corporation (J..	Good Intentio ..	Good Intention ...	100.00
Deposit	3/2/2006	5077	Kirchner Bros.	Good Intentio	Good Intention ...	100.00
Deposit	3/2/2006	11408	Sullivan, James & A...	Good Intentio ...	Good Intention ...	100.00
Deposit	3/6/2006	2175	Thoeny, Michael A.	Good Intentio...	Good Intention .	100.00
Deposit	3/6/2006	1336	Liese, David	Good Intentio ..	Good Intention	100.00
Deposit	3/6/2006	0111	Jansen, Ray	Good Intentio	Good Intention ..	100.00
Deposit	3/6/2006	7471	Moos, Donald	Good Intentio	Good Intention ..	100.00
Deposit	3/6/2006	6143	Waller, Alvin & Mary	Good Intentio.	Good Intention...	100.00
Deposit	3/6/2006	11403	Klasna, Tim	Good Intentio.	Good Intention.	100.00
Deposit	3/6/2006	5424	Vaira, Kelly	Good Intentio.	Good Intention	100.00
Deposit	3/6/2006	2214	Vaira, Collin	Good Intentio.	Good Intention..	100.00
Deposit	3/6/2006	12625	Vaira, Paul	Good Intentio.	Good Intention ..	100.00
Deposit	3/6/2006	4514	Gene & Delores Irig. ..	Good Intentio...	Good Intention ..	100.00
Deposit	3/6/2006	12105	Sunny Slope Ranch .	Good Intentio...	Good Intention .	100.00
Deposit	3/6/2006	8065	Kvaalen, Jon	Good Intentio...	Good Intention ...	100.00
Deposit	3/6/2006	3775	Hinnaland Trucking ...	Good Intentio...	Good Intention .	100.00
Deposit	3/6/2006	1153	James Schillinger F...	Good Intentio.	Good Intention...	100.00
Deposit	3/6/2006	3419	Allan Schillinger Far	Good Intentio .	Good Intention.	100.00
Deposit	3/8/2006	6356	Boysun, Arnold	Good Intentio .	Good Intention.	100.00
Deposit	3/8/2006	6044	Becker, Scott & Ko..	Good Intentio.	Good Intention...	100.00
Deposit	3/13/2006		Lone PineRanch Inc	Good Intentio ..	Good Intention.	100.00
Deposit	3/14/2006	7256	Zuroff, Kathleen	Good Intentio ..	Good Intention...	100.00
Deposit	3/14/2006	11367	Swihart, Mrs. Allen	Good Intentio .	Good Intention...	100.00
Deposit	3/14/2006	227	Gossen Farms (Cliff. .	Good Intentio .	Good Intention...	100.00
Deposit	3/14/2006	4944	Kasten, David	Good Intentio...	Good Intention...	100.00
Deposit	3/14/2006	5235	Heide, Dale	Good Intentio.	Good Intention...	100.00
Deposit	3/14/2006	8780	Grist Ranch (Bill & ..	Good Intentio...	Good Intention...	100.00
Deposit	3/14/2006	7067	Larson, Thomas K	Good Intentio	Good Intention	100.00
Deposit	3/20/2006	4678	Soda Creek Inc	Good Intentio...	Good Intention ..	100.00
Deposit	3/20/2006	2335	Haynie, Elliot & She..	Good Intentio	Good Intention...	100.00
Deposit	3/20/2006	3861	Ruffatto, Audrey	Good Intentio ...	Good Intention...	100.00
Deposit	3/20/2006	7256	Wagner, Vic	Good Intentio	Good Intention...	100.00
Deposit	3/20/2006	1653	Brown, Scott	Good Intentio .	Good Intention	100.00
Deposit	3/20/2006	1326	Kluth, Donald	Good Intentio	Good Intention .	100.00
Deposit	3/20/2006	4637	Petrik, Lewis & June	Good Intentio ...	Good Intention .	100.00

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Accrual Basis

Dry-Redwater Reg. Water Authority
Good Intention Fee Hookup/customer
January 1 through June 8, 2006

Type	Date	Num	Name	Memo	Split	Amount
Deposit	3/21/2006	4409	Town of Jordan	Good Intentio	Good Intention...	250.00
Deposit	4/3/2006	3074	Sikveland, Rex & Ni	Good Intentio...	Good Intention...	100.00
Deposit	4/3/2006	1700	Garpestad, Gordon	Good Intentio	Good Intention...	100.00
Deposit	4/3/2006	6047	Murphy Ranch	Good Intentio...	Good Intention...	100.00
Deposit	4/11/2006	436	Lambert Cnty Sewe...	Good Intentio...	Good Intention...	150.00
Deposit	4/11/2006	1047	Ward, James	Good Intentio	Good Intention	100.00
Deposit	4/11/2006	11208	Hunter, James & R.	Good Intentio	Good Intention.	100.00
Deposit	4/11/2006	1967	Smokey River Ranc...	Good Intentio	Good Intention	100.00
Deposit	4/11/2006	15662	Shannon, Richard	Good Intentio	Good Intention.	100.00
Deposit	4/11/2006	12511	Bar JV Angus (Jam...	Good Intentio	Good Intention...	100.00
Deposit	4/11/2006	1859	Cavanough, Greg & ...	Good Intentio ...	Good Intention...	100.00
Deposit	4/11/2006	4946	Frideres, Darrell E	Good Intentio ...	Good Intention	100.00
Deposit	4/11/2006	9735	Hungry Acres, Inc. (...	Good Intentio	Good Intention.	100.00
Deposit	4/11/2006	3541	Hinnaland, David &	Good Intentio	Good Intention.	100.00
Deposit	4/20/2006	839	Crockett, Ed	Good Intentio ...	Good Intention...	100.00
Deposit	4/20/2006	0010	Great Northern Pow...	Good Intentio	Good Intention.	500.00
Deposit	4/20/2006	7045	Wheeler, Becky	Good Intentio ...	Good Intention...	100.00
Deposit	4/20/2006	7636	Irigoin, Thomas	Good Intentio.	Good Intention	100.00
Deposit	4/20/2006	5507	Vitt, Shari	Good Intentio	Good Intention	100.00
Deposit	4/20/2006	2801	Vitt, Steven	Good Intetnio...	Good Intention.	100.00
Deposit	4/20/2006	3316	Linde Ranch	Good Intentio...	Good Intention...	100.00
Deposit	4/20/2006	7038	Buckley, Jim & Stacy	Good Intentio ...	Good Intention	100.00
Deposit	4/20/2006	1224	Kopp, Ron & Peggy	Good Intentio ...	Good Intention...	100.00
Deposit	4/20/2006	2098	Daniels, Rebecca	Good Intentio ...	Good Intention...	100.00
Deposit	4/20/2006	8146	Sundheim, Jeff	Good Intentio.	Good Intention	100.00
Deposit	4/20/2006	14675	Burns, Randall & R ...	Good Intentio...	Good Intention...	100.00
Deposit	4/20/2006	24277	Town of Circle	Good Intentio...	Good Intention...	400.00
Deposit	5/1/2006	11215	Town of Richey	Good Intentio...	Good Intention...	200.00
Deposit	5/1/2006	1019	Murphy Land & Cattle	Good Intentio.	Good Intention...	100.00
Deposit	5/1/2006	12620	Vitt, Dale	Good Intentio.	Good Intention	100.00
Deposit	5/1/2006	4053	McGinnis Ranch	Good Intentio...	Good Intention...	100.00
Deposit	5/1/2006	2319	Salsbury, Joan	Good Intentio...	Good Intention...	100.00
Deposit	5/1/2006	0902	Danielson, Ronnie	Good Intentio ...	Good Intention...	100.00
Deposit	5/1/2006	11513	Sundheim, Jim & S	Good Intentio ...	Good Intention...	100.00
Deposit	5/1/2006	3805	Lewis, William	Good Intentio...	Good Intention...	100.00
Deposit	5/1/2006	5843	Timber Creek Ranc.	Good Intentio...	Good Intention	100.00
Deposit	5/1/2006	4373	Iverson, Richard	Good Intentio .	Good Intention.	100.00
Deposit	5/1/2006	5794	Baue, Donald & Na...	Good Intentio...	Good Intention	100.00
Deposit	5/12/2006	7950	Vejtasa, Gene	Good Intentio ...	Good Intention...	100.00
Deposit	5/12/2006	10183	Schmidt, Larry	Good Intentio .	Good Intention...	100.00
Deposit	5/12/2006	1503	Loendorf, Art and S...	Good Intentio	Good Intention ...	100.00
Deposit	5/12/2006	0979	Bliss, Matt	Good Intentio	Good Intention ...	100.00
Deposit	5/19/2006	6036	Robinette, Rick &	Good Intentio ...	Good Intention ...	100.00
Deposit	5/22/2006	8011	Triop Farms	Good Intentio ...	Good Intention	200.00
Deposit	5/22/2006	4985	Stormer, Bryan	Good Intentio ...	Good Intention	100.00
Deposit	5/22/2006	5407	Schmidt Herefords I...	Good Intentio...	Good Intention.	100.00
Deposit	5/22/2006	6461	Glenn Waller Inc	Good Intentio	Good Intention...	100.00
Deposit	5/22/2006	2467	Johnson, Mary Jeane	Good Intentio.	Good Intention	100.00
Deposit	5/22/2006	9419	Hovland, David & K	Good Intentio.	Good Intention.	100.00
Deposit	5/22/2006	4812	Four Mile Farms	Good Intentio...	Good Intention.	100.00
Deposit	5/22/2006	9298	Ullman, Duane	Good Intentio.	Good Intention...	100.00
Deposit	5/22/2006	5405	Berry, John & Loretta	Good Intentio...	Good Intention	100.00
Deposit	5/22/2006	1001	Kittleson Family Par	Good Intentio...	Good Intention	100.00
Deposit	5/22/2006	12606	Zoanni, Donald & J...	Good Intentio	Good Intention ...	100.00
Deposit	5/22/2006	8171	Torgerson, Rocky &	Good Intentio...	Good Intention	100.00
Deposit	5/22/2006	1225	Arndt, Frederick R	Good Intentio	Good Intention	100.00
Deposit	5/22/2006		Gieser, Gale & Nor...	Good Intentio.	Good Intention.	100.00
Deposit	5/22/2006	12898	Donohoe, Gordon &...	Good Intentio	Good Intention...	100.00
Deposit	5/22/2006	4220	Jensen Brothers	Good Intentio.	Good Intention...	100.00
Deposit	5/22/2006	3052	Kasten, Frank III	Good Intentio	Good Intention...	100.00
Deposit	5/22/2006	5329	Merry, Kenneth E	Good Intentio...	Good Intention	100.00

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Accrual Basis

Dry-Redwater Reg. Water Authority
Good Intention Fee Hookup/customer
January 1 through June 8, 2006

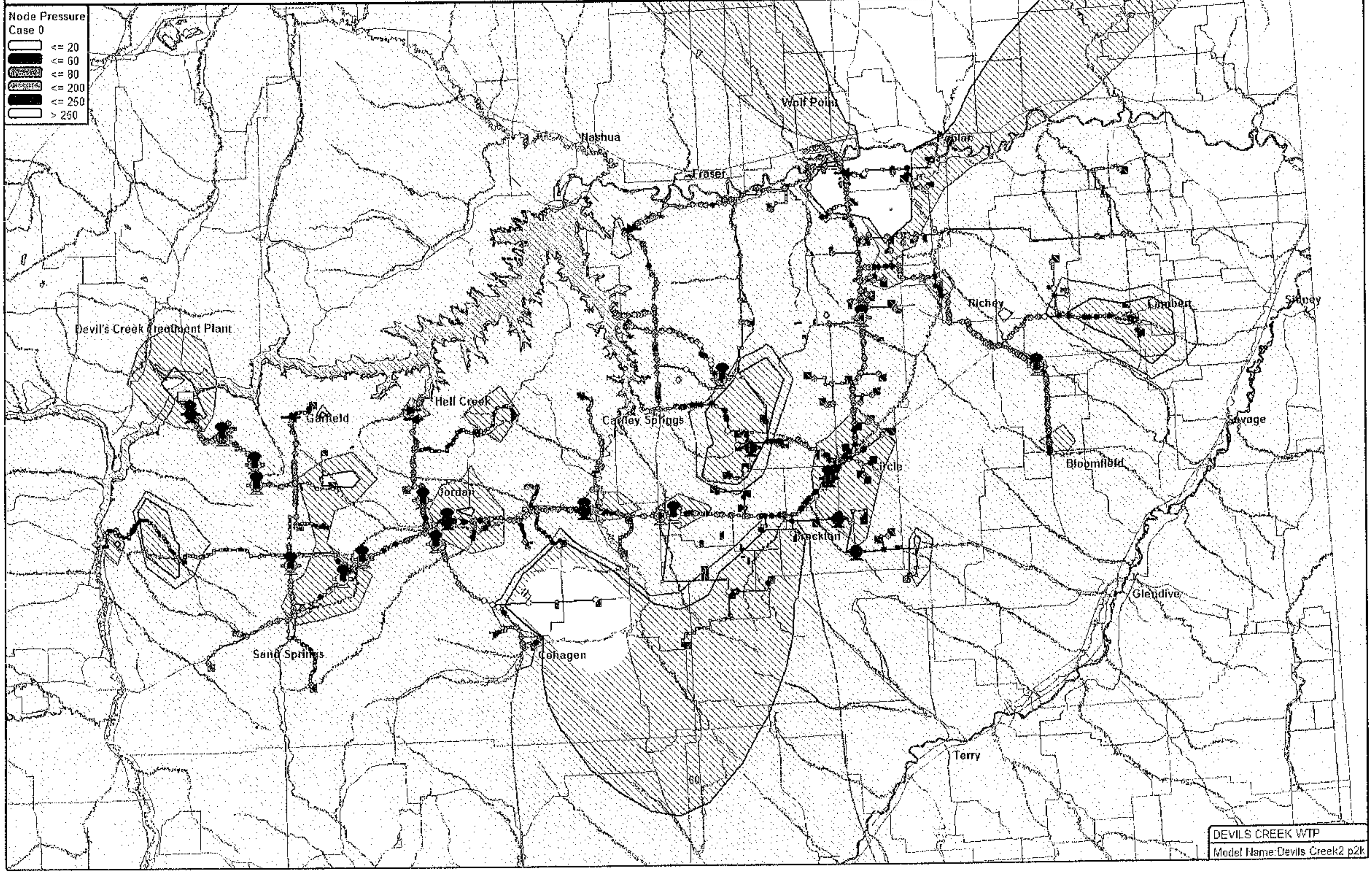
Type	Date	Num	Name	Memo	Split	Amount
Deposit	5/22/2006	7066	Whitney, Todd & Peg	Good Intentio...	Good Intention ...	100.00
Deposit	5/22/2006	6857	Richard, LeRoy	Good Intentio...	Good Intention ...	200.00
Total Good Intention Fee						14,250.00
Total Contributions Income						14,250.00
TOTAL						**14,250.00**

Appendix I

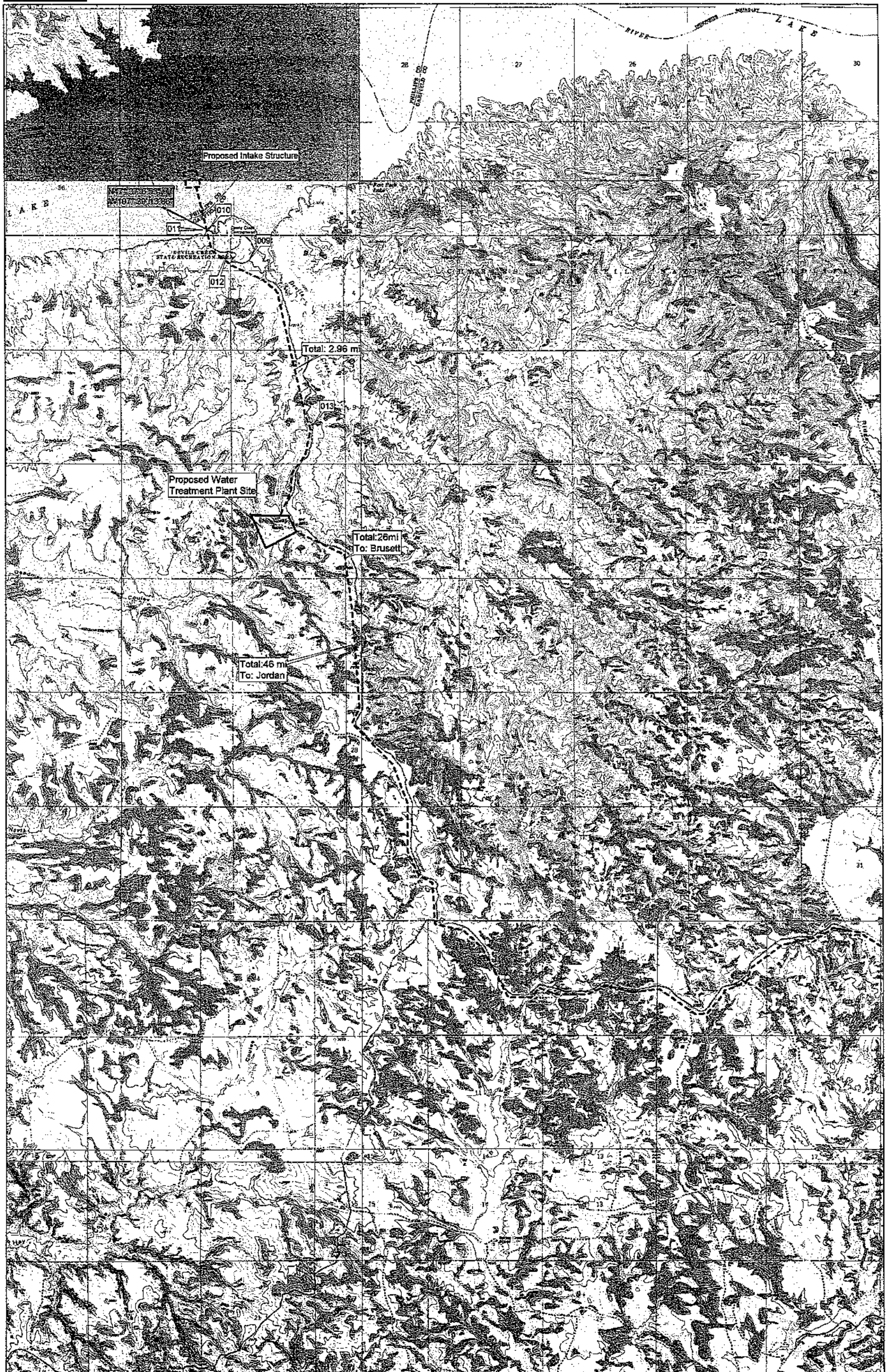
Computer Modeling Information and Cost Estimates

Devils Creek Model

DRY REDWATER - DEVIL'S CREEK



DeLORME XMap® 4.5



Scale 1 : 50,000

1" = 4,166.7 ft Data Zoom 13-0

DRY REDWATER - DEVILS CREEK WTP - PRELIMINARY COST ESTIMATE

Description	Quantity	Unit	Unit Price	Total Price
3" PVC Class 100	10,478	LF	$ 7.53	$ 78,900.00
4" PVC Class 100	148,392	LF	$ 7.74	$ 1,148,600.00
5" PVC Class 100	9,121	LF	$ 8.33	$ 76,000.00
6" PVC Class 100	9,105	LF	$ 9.03	$ 82,200.00
8" PVC Class 100	42,701	LF	$ 10.50	$ 448,400.00
10" PVC Class 100	96,993	LF	$ 12.33	$ 1,195,900.00
12" PVC Class 100	128,215	LF	$ 14.73	$ 1,888,600.00
2" PVC Class 160	0	LF	$ 7.44	$ -
2.5" PVC Class 160	434,927	LF	$ 7.51	$ 3,266,300.00
3" PVC Class 160	74,532	LF	$ 7.65	$ 570,200.00
4" PVC Class 160	368,294	LF	$ 8.04	$ 2,961,100.00
5" PVC Class 160	42,454	LF	$ 8.67	$ 368,100.00
6" PVC Class 160	334,897	LF	$ 9.24	$ 3,094,400.00
8" PVC Class 160	161,041	LF	$ 10.79	$ 1,737,600.00
10" PVC Class 160	119,945	LF	$ 12.88	$ 1,544,900.00
12" PVC Class 160	32,397	LF	$ 15.09	$ 488,900.00
2" PVC Class 200	0	LF	$ 7.41	$ -
2.5" PVC Class 200	18,133	LF	$ 7.60	$ 137,800.00
3" PVC Class 200	14,045	LF	$ 7.78	$ 109,300.00
4" PVC Class 200	132,154	LF	$ 8.00	$ 1,057,200.00
5" PVC Class 200	5,765	LF	$ 9.05	$ 52,200.00
6" PVC Class 200	53,959	LF	$ 9.72	$ 524,500.00
8" PVC Class 200	130,348	LF	$ 11.60	$ 1,512,000.00
10" PVC Class 200	58,741	LF	$ 18.37	$ 1,079,100.00
12" PVC Class 200	86,315	LF	$ 20.12	$ 1,736,700.00
1"PVC Class 250	1,041,586	LF	$ 4.00	$ 4,166,300.00
1.5"PVC Class 250	217,499	LF	$ 7.40	$ 1,609,500.00
2"PVC Class 250	25,254	LF	$ 7.45	$ 188,100.00
2.5"PVC Class 250	623,464	LF	$ 7.65	$ 4,769,500.00
3" PVC Class 250	14,807	LF	$ 7.98	$ 118,200.00
4" PVC Class 250	200,898	LF	$ 8.62	$ 1,731,700.00
5" PVC Class 250	15,820	LF	$ 9.45	$ 149,500.00
6" PVC Class 250	168,083	LF	$ 10.51	$ 1,766,600.00
8" PVC Class 250	129,218	LF	$ 12.97	$ 1,676,000.00
10" PVC Class 250	135,294	LF	$ 16.31	$ 2,206,600.00
12" PVC Class 250	82,093	LF	$ 23.03	$ 1,890,600.00
Storage Tanks In Line (20,000 Gal ave)	16	EA	$ 35,000.00	$ 560,000.00
WTP Stroage Tank (1,00,000 Gal)	1	EA	$ 1,000,000.00	$ 1,000,000.00
Pump Stations (16)	16	EA	$ 35,000.00	$ 560,000.00
Regulator Stations	9	EA	$ 6,000.00	$ 54,000.00
Mobilization	1	L.S.	$ 150,000.00	$ 150,000.00
Aggregrate Surfaces	1400	C.Y.	$ 20.00	$ 28,000.00
Unclassified Excavation	104,000	C.Y.	$ 2.00	$ 208,000.00
12" Inlet Piping	1080	L.F.	$ 27.00	$ 29,160.00
12" Gate Valve & Box	2	Each	$ 2,100.00	$ 4,200.00
Inlet Splash Pad	2	Each	$ 700.00	$ 1,400.00
Hydroburst System	1	Each	$ 22,500.00	$ 22,500.00

Pipe2000 [Devils Creek2]

File Edit View Analyze Move Labels Facilities Management Tools Help

KYPipe: GPM Eq: HW Table Index # Node:2710

Map | Map Settings | System Data | Other Data | Setup/Defaults | Report

Print | Clear | Font | Load/Swap | Customize | All

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P U M P / L O S S   E L E M E N T   D A T A

THERE IS A PUMP AT NODE  CohagerBst; USEFUL POWER =     3.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  HelCrkBstr; USEFUL POWER =     2.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE      Intake; USEFUL POWER =    50.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     JinBstr; USEFUL POWER =    50.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  JdnCirBst1; USEFUL POWER =   135.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  JdnCirBst2; USEFUL POWER =   115.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  JdnCirBst3; USEFUL POWER =   125.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  JdnCirBst4; USEFUL POWER =   115.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE      Pump-1; USEFUL POWER =     0.10 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE      Pump-2; USEFUL POWER =     0.10 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE      Pump-3; USEFUL POWER =     5.00 (Efficiency =   0.75%)
THERE IS A PUMP AT NODE      Pump-4; USEFUL POWER =     0.75 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE      Pump-5; USEFUL POWER =     0.15 (Efficiency =   1.00%)
THERE IS A PUMP AT NODE      Pump-6; USEFUL POWER =     0.15 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE    Pump-DC1; USEFUL POWER =    25.00 (Efficiency =  75.00%)
```

X : 746504.542 Y : 350786.514 D : 34498.879 Analyze P Flow N Pres A Case 0 B Case 0

Pipe2000 [Devils Creek2]

File Edit View Analyze Move Labels Facilities Management Tools Help

KYPipe: GPM Eq: HW Table Index # Node:2710

Map | Map Settings | System Data | Other Data | Setup/Defaults | Report

Print | Clear | Font | Load/Swap | Customize | All

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THERE IS A PUMP AT NODE    Pump-DC1; USEFUL POWER =    25.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE    Pump-DC2; USEFUL POWER =    50.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE    Pump-DC3; USEFUL POWER =    80.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  RicheyBstr; USEFUL POWER =     2.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  SndSprBstr; USEFUL POWER =     5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  WolfPtBstr; USEFUL POWER =    25.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE      WTP-HS; USEFUL POWER =    32.00 (Efficiency =  75.00%)


E N D   N O D E   D A T A

      NODE      NODE       EXTERNAL      JUNCTION      EXTERNAL
      NAME      TITLE       DEMAND       ELEVATION      GRADE
                            (gpm)          (ft)          (ft)
   ----------------------------------------------------------------
      2062                   0.00        2365.35
      2063                   2.00        2247.57
      2065                   0.00        2528.44
      2073                   2.00        2403.57
      2074                   0.00        2552.13
      2075                   2.00        2074.57
      2076                   0.00        2035.95
```

X : 746504.542 Y : 350786.514 D : 34498.879 Analyze P Flow N Pres A Case 0 B Case 0

Inventory/Cost Summary

Pipe Type	Number	Total Length	Cost/Unit	Total Cost
PVC - 100 - 3	1	10478	7.53	78895.83
PVC - 100 - 4	34	148392	7.74	1148550.71
PVC - 100 - 5	1	9121	8.33	75980.18
PVC - 100 - 6	3	9105	9.03	82214.93
PVC - 100 - 8	19	42701	10.50	448356.91
PVC - 100 - 10	18	96993	12.33	1195923.75
PVC - 100 - 12	13	128215	14.73	1888613.63
PVC - 160 - 2.5	22	434927	7.51	3266303.02
PVC - 160 - 3	16	74532	7.65	570167.34
PVC - 160 - 4	76	368294	8.04	2961080.88
PVC - 160 - 5	8	42454	8.67	368076.50
PVC - 160 - 6	51	334897	9.24	3094449.37
PVC - 160 - 8	42	161041	10.79	1737636.33
PVC - 160 - 10	30	119945	12.88	1544886.50
PVC - 160 - 12	15	32397	15.09	488870.27
PVC - 200 - 2.5	2	18133	7.60	137808.42
PVC - 200 - 3	1	14045	7.78	109272.44
PVC - 200 - 4	24	132154	8.00	1057230.50
PVC - 200 - 5	6	5765	9.05	52174.68
PVC - 200 - 6	6	53959	9.72	524484.57
PVC - 200 - 8	30	130348	11.60	1512031.26
PVC - 200 - 10	21	58741	18.37	1079078.30
PVC - 200 - 12	18	86315	20.12	1736666.87
PVC - 250 - 1	133	1041586	4.00	4166345.46
PVC - 250 - 1.5	7	217499	7.40	1609489.24
PVC - 250 - 2	2	25254	7.45	188145.31
PVC - 250 - 2.5	4	623464	7.65	4769496.40
PVC - 250 - 3	4	14807	7.98	118159.80
PVC - 250 - 4	21	200898	8.62	1731739.34
PVC - 250 - 5	5	15820	9.45	149496.00
PVC - 250 - 6	25	168083	10.51	1766552.36
PVC - 250 - 8	31	129218	12.97	1675954.80
PVC - 250 - 10	40	135294	16.31	2206650.66
PVC - 250 - 12	18	82093	23.03	1890596.00
Total	747	5166967	8.79	45431378.55

No fittings specified in system

Device Summary

696 junction nodes
16 tanks
1 resevervoirs
21 pumps
9 regulators
1953 intermediate nodes

P- 22	JD-1Ann	J- 85	5267 54	8 00	140.0000	0 00
P- 23	JS-6	JS-5	9280 84	4.00	140.0000	0 00
P- 24	JH-1	JH-2	2912 63	3 00	140.0000	0 00
P- 25	JS-7	JS-6	3801.13	4 00	140 0000	0.00
P- 26	JS-10	JS-9	2250 13	4.00	140 0000	0 00
P- 27	JS-21	JS-20	2181.14	12.00	140.0000	0 00
P- 28	J- 87	J- 88	36.40	8 00	140.0000	0.00
29	J-123	JW-2	1227 49	10 00	140 0000	0.00
30	J- 23	JW-2	564 07	10 00	140.0000	0.00
P- 31	JC-54A	J-101	1074.19	10.00	140.0000	0 00
P- 32	J- 21	JW-40	3910.61	8.00	140.0000	0 00
P- 33	R- 1	@-Intake	1661 39	12 00	140 0000	0.00
P- 34	2215	2195	3391 00	1 00	140 0000	0.00
P- 35	JD-1	JD-1Ann	827.87	10.00	140.0000	0.00
P- 36	JR-21	JR-22	1278.08	8 00	140.0000	0 00
P- 37	J- 79	J- 61	9799 81	8 00	140 0000	0 00
P- 38	JC-33	JC-34	2358 62	10 00	140 0000	0 00
P- 39	JC-34	J- 47	1520.84	10.00	140 0000	0.00
P- 40	JC-35	JC-36	8727.58	10.00	140.0000	0.00
P- 41	JC-38	JC-39	3149 97	10 00	140.0000	0 00
P- 42	JC-39	J-216	7982 84	10 00	140 0000	0 00
P- 43	JC-1	JC-2	2633.64	10.00	140 0000	0 00
P- 44	JC-2	JC-3	8173.63	10.00	140.0000	0.00
P- 45	I- 9@-JdnCirBs		169.75	10.00	140.0000	0.00
P- 46	JD-1Ann	JC-1	3207.80	10 00	140 0000	0.00
P- 47	JC-5	JC-6	3624 32	10 00	140 0000	0 00
P- 48	JC-7	JC-7A	6246.38	10 00	140 0000	0 00
P- 49	JC-8	JC-9	4595.95	10.00	140 0000	0 00
P- 50	JC-11	JC-12	15607 46	10 00	140.0000	0.00
P- 51	JC-10	JC-11	3829 90	10 00	140 0000	0.00
P- 52	JC-12	JC-13	3570.55	10 00	140 0000	0 00
P- 53	JC-15	JC-16	5880.14	10.00	140.0000	0 00
P- 54	JC-16	JC-17	2147 36	10.00	140.0000	0 00
P- 55	JC-17	JC-18	6244 33	10.00	140.0000	0.00
P- 56	JC-18	JC-19	2217.34	10 00	140 0000	0.00
P- 57	JC-6	J-210	1124.68	10 00	140 0000	0 00
P- 58	JC-19	JC-20	579.29	10.00	140.0000	0 00
P- 59	JC-21	JC-22	8337 54	10.00	140.0000	0 00
P- 60	JC-22	JC-23	9382 47	10.00	140.0000	0.00
61	JC-23	JC-24	1199.10	10 00	140.0000	0.00
62	JC-24	JC-25	4650.24	10 00	140 0000	0.00
P- 63	JC-25	J- 55	3363.71	10 00	140.0000	0 00
P- 64	JC-26	JC-27	3931.88	10.00	140.0000	0 00
P- 65	JC-27	J-212	4289.12	10.00	140.0000	0.00
P- 66	JC-28	J-214	8774.57	10 00	140 0000	0.00
P- 67	JC-29	JC-30	12892.63	10 00	140 0000	0 00
P- 68	JR-5	JR-6	5526 16	6.00	140 0000	0 00
P- 69	JC-30	JC-31	7744 47	10.00	140.0000	0 00
P- 70	JC-31	JC-31A	3686.67	10.00	140.0000	0 00
P- 71	JC-36	JC-37	2694.92	10.00	140.0000	0.00
P- 72	JC-37	JC-38	1848.73	10.00	140.0000	0.00
P- 73	JC-40	JC-41	3910.28	10.00	140.0000	0.00
P- 74	J-119	JC-41	6607 03	10 00	140 0000	0.00
P- 75	J-119	J-273	1239 94	10 00	140 0000	0.00
P- 76	J-273	J-278	263 91	10 00	140 0000	0 00
P- 77	JC-44	JC-45	8977.88	10.00	140.0000	0 00
P- 78	JC-51	JC-50	13985.02	10.00	140.0000	0 00
P- 79	JL-15	J- 8	1413 42	4 00	140 0000	0.00
P- 80	JC-53	JC-51	6894 83	10 00	140 0000	0.00
P- 81	JC-54	JC-53	3158 60	10 00	140 0000	0.00
P- 82	JC-54	JC-55	7144.96	10.00	140.0000	0.00
P- 83	JC-56	JC-55	9799.43	10.00	140.0000	0 00
P- 84	T- 12	JC-56	5181 09	10.00	140.0000	0 00
P- 85	JC-58JdnCirBst4		8641 06	10 00	140 0000	0.00
P- 86	JC-59	JC-58	1441 55	10 00	140 0000	0.00
P- 87	JW-9	JW-9A	2147.00	10.00	140 0000	0.00
P- 88	JW-3	J-287	4711.08	10.00	140.0000	0 00
P- 89	JR-4	JR-5	2640 18	6 00	140.0000	0 00
P- 90	JL-8	JL-9	1256 26	4 00	140 0000	0 00
P- 91	JR-18	JR-19	4646 21	8 00	140 0000	0.00
P- 92	JW-6	JW-6A	3510.45	10.00	140.0000	0.00
93	JW-8	J-103	5431 97	10.00	140.0000	0 00
94	JW-10	JW-11	3762 70	8.00	140.0000	0 00
P- 95	JW-11	J-319	1316 97	8 00	140 0000	0 00
P- 96	J- 88	J-148	1125.54	8 00	140 0000	0.00
P- 97	JW-14	J-164	3225.87	8.00	140 0000	0 00
P- 98	JW-15	JW-16	6470 64	8.00	140.0000	0 00
P- 99	JW-16	JW-17	574 18	8.00	140.0000	0 00
P-100	JW-18	JW-19	1555 80	8 00	140 0000	0 00

P-180	J-131	J-133	84.19	8 00	140 0000	0.00
P-181	JR-32	JR-31	3033 40	8.00	140 0000	0.00
P-182	JR-30	JR-31	4276 60	8.00	140.0000	0.00
P-183	JR-20	JR-21	1438.06	8 00	140 0000	0 00
P-184	JC-31A	JC-32	1631.64	10 00	140 0000	0.00
P-185	J- 71	J- 61	3946 14	8 00	140.0000	0.00
P-186	JC-9	JC-10	4453 24	10.00	140.0000	0 00
187	JC-9	JC-8A	351.23	10 00	140 0000	0 00
188	JC-13	JC-15	3572.18	10 00	140 0000	0 00
P-189	I- 10@-JdnCirBs		8 55	10 00	140 0000	0.00
P-190	JC-52	JC-59	2277 76	10 00	140.0000	0.00
P-191	JC-20	JC-21	7248 61	10.00	140.0000	0 00
P-192	J-181	J- 83	2897.24	3.00	140 0000	0 00
P-193	JH-12	JH-13	4975.23	5 00	140 0000	0.00
P-194	JN-21	JN-22	7137 43	6 00	140.0000	0.00
P-195	J-281	JN-24	3810 98	6.00	140.0000	0.00
P-196	J-234	JS-24	1225.05	12 00	140.0000	0.00
P-197	JD-3	JD-4	745.57	10 00	140 0000	0 00
P-198	JD-2	JD-3	2022.58	10 00	140.0000	0 00
P-199	JS-4	JS-3	8158 35	4.00	140.0000	0.00
P-200	JS-5	JS-4	5613 54	4.00	140.0000	0.00
P-201	JC-54A	RV-2	1988.51	10.00	140.0000	0 00
P-202	JS-13	I- 3	8896.94	4 00	140 0000	0 00
P-203	J- 41	JS-16	2565 28	12 00	140.0000	0 00
P-204	J-171	JS-13	3088 57	4.00	140.0000	0.00
P-205	JR-8	JR-7	5135 39	8.00	140.0000	0.00
P-206	JR-7	JR-6	5271.45	6.00	140.0000	0.00
P-207	JR-8	J- 22	3177.08	8.00	140 0000	0.00
P-208	JR-24	J- 78	858.81	8.00	140 0000	0 00
P-209	JR-43	JR-41	2635 92	8 00	140.0000	0.00
P-210	JR-41	JR-40	1601.17	8.00	140.0000	0.00
P-211	JR-43	J-199	510.86	6.00	140.0000	0.00
P-212	JW-31	JR-1	4773.27	6 00	140 0000	0.00
P-213	JL-7	JL-8	6866 05	4 00	140 0000	0 00
P-214	JL-11	JL-12	5249.58	4 00	140 0000	0 00
P-215	JL-2	JL-3	8171.23	4.00	140 0000	0.00
P-216	J- 81	JL-35	988.37	8.00	140.0000	0.00
P-217	JCO-15CohagenBst		9048.39	4.00	140.0000	0.00
P-218	JCO-11	JCO-12	271 66	4 00	140 0000	0.00
219	JCO-12	JCO-13	1913.41	4.00	140 0000	0 00
220	JCO-7	JCO-8	7473.52	4.00	140.0000	0.00
P-221	JCO-3	JCO-4	8778.86	4.00	140.0000	0.00
P-222	J-122	JN-19	3350.50	6.00	140.0000	0.00
P-223	JL-1	J-200	6695 43	4 00	140 0000	0.00
P-224	J-104	J-134	6131.64	12 00	140 0000	0 00
P-225	J- 81	JL-36	282.15	8.00	140.0000	0 00
P-226	JR-2	JR-3	2826.29	6.00	140.0000	0.00
P-227	2218	J-170	1091.36	8.00	140.0000	0.00
P-228	JS-8	JS-7	12560 67	4.00	140.0000	0.00
P-229	JR-3	JR-4	2403 07	6 00	140.0000	0.00
P-230	JR-9	JR-10	8263 09	8 00	140 0000	0.00
P-231	JR-10	J-109	7636 96	8 00	140 0000	0.00
P-232	J-109	@-RV-5	92 92	8.00	140 0000	0.00
P-233	JR-14	JR-15	4575.91	8.00	140.0000	0 00
P-234	I- 5@-Pump-DC3		48.32	12.00	140.0000	0 00
P-235	J-124	J-123	151 79	10 00	140.0000	0 00
P-236	J-134	J-135	4219 00	12 00	140.0000	0 00
P-237	JR-32	JR-33	1071 28	8 00	140 0000	0.00
P-238	J- 78	J- 79	147.11	8.00	140 0000	0.00
P-239	J-133	JR-35	5420.48	8.00	140.0000	0.00
P-240	J- 45	J-288	4027.80	6.00	140.0000	0.00
P-241	JCO-10	JCO-9	5284 38	4 00	140.0000	0 00
P-242	@-JdnBstr	I- 6	350 27	12 00	140 0000	0 00
P-243	J-163	J-147	6567 16	8.00	140 0000	0 00
P-244	JL-3A	JL-4	69.56	4.00	140 0000	0.00
P-245	JL-5	J-116	618.29	4.00	140.0000	0.00
P-246	JR-36	JR-37	3217.39	8 00	140.0000	0.00
P-247	JR-35	JR-36	1751 47	8.00	140 0000	0 00
P-248	JR-40	JR-39	575 27	8.00	140 0000	0 00
P-249	JBL-11	JBL-12	1212.35	4.00	140 0000	0.00
P-250	J- 72	JBL-4	154.38	4.00	140.0000	0.00
251	JBL-4	JBL-5	1905 69	4 00	140.0000	0.00
252	JC-48	JC-49	2766 81	10 00	140.0000	0 00
P-253	JC-47	JC-48	6322.53	10.00	140.0000	0 00
P-254	JC-46	JC-47	5309.60	10.00	140.0000	0.00
P-255	JC-45	JC45A	2133 00	10 00	140.0000	0.00
P-256	JW-12A	J- 87	337 71	8 00	140.0000	0.00
P-257	JN-24	J- 12	5969 68	6.00	140 0000	0 00
P-258	JN-23	J- 45	589.47	6.00	140 0000	0 00

P-338	JW-9A	JW-10	5643.37	10.00	140.0000	0.00
P-339	JW-43	JWP-7	3786.55	8.00	140.0000	0.00
P-340	JWP-4	JWP-3	5443.29	8.00	140.0000	0.00
P-341	JWP-3	JWP-2	2705.70	8.00	140.0000	0.00
P-342	JWP-2	JWP-1	5331.10	8.00	140.0000	0.00
P-343	JWP-5	JWP-4	4250.13	8.00	140.0000	0.00
P-344	JWP-6	JWP-5	9765.12	8.00	140.0000	0.00
345	JWP-7	JWP-6	2243.87	8.00	140.0000	0.00
346	J- 3	JW-44	4632.29	8.00	140.0000	0.00
P-347	J-110	JG-14	2294.57	12.00	140.0000	0.00
P-348	J- 3	J- 14	3006.08	8.00	140.0000	0.00
P-349	J- 14	J- 15	4238.79	8.00	140.0000	0.00
P-350	J- 15	J- 1	3874.54	8.00	140.0000	0.00
P-351	J- 16	JW-37	4959.65	8.00	140.0000	0.00
P-352	@-RV-3	J- 20	559.16	8.00	140.0000	0.00
P-353	J-128	J- 20	1266.70	8.00	140.0000	0.00
P-354	J-103	JW-9	8421.10	10.00	140.0000	0.00
P-355	J-114	J-115	2692.22	12.00	140.0000	0.00
P-356	J- 22	J- 43	4749.83	8.00	140.0000	0.00
P-357	J- 43	JR-9	4021.53	8.00	140.0000	0.00
P-358	J- 76	J- 75	2505.27	4.00	140.0000	0.00
P-359	J- 77	JBL-7A	4426.09	4.00	140.0000	0.00
P-360	J-135	J-137	3513.90	12.00	140.0000	0.00
P-361	J- 86	J-108	1765.33	6.00	140.0000	0.00
P-362	J- 86	JD-1	676.66	6.00	140.0000	0.00
P-363	J-137	J-143	4431.45	12.00	140.0000	0.00
P-364	I- 14	WolfPtBstr	18.63	8.00	140.0000	0.00
P-365	J-138	J- 80	5062.76	12.00	140.0000	0.00
P-366	J-118	JG-11	3144.93	4.00	140.0000	0.00
P-367	JC-5	J-235	776.88	10.00	140.0000	0.00
P-368	J- 98	JR-33	1371.73	8.00	140.0000	0.00
P-369	RicheyBstr	JBL-9	3087.52	4.00	140.0000	0.00
P-370	J-101	JN-25	387.67	10.00	140.0000	0.00
P-371	J-131	J- 98	244.33	8.00	140.0000	0.00
P-372	2240	J-103	734.76	1.00	140.0000	0.00
P-373	J- 12	J-490	672.41	6.00	140.0000	0.00
P-374	J-125	J-123	208.37	3.00	140.0000	0.00
P-375	J-115	I- 1	4811.04	12.00	140.0000	0.00
P-376	Intake	J-207	857.04	12.00	140.0000	0.00
377	T- 1	@-WIP-HS	1163.99	12.00	140.0000	0.00
-378	WIP-HS	J-104	945.38	12.00	140.0000	0.00
P-379	@-WolfPtBs	JW-22	2094.70	8.00	140.0000	0.00
P-380	J-143	J-138	2649.86	12.00	140.0000	0.00
P-381	J-145	J-147	3569.33	12.00	140.0000	0.00
P-382	J- 80	J-145	1498.97	12.00	140.0000	0.00
P-383	J- 80	J-129	1132.24	1.00	140.0000	0.00
P-384	J-151	J-153	10322.09	12.00	140.0000	0.00
P-385	J-153	J-155	12625.04	12.00	140.0000	0.00
P-386	J-155	J-157	10097.32	12.00	140.0000	0.00
P-387	J-157	I- 4	2948.13	12.00	140.0000	0.00
P-388	I- 4	@-Pump-DC2	118.14	12.00	140.0000	0.00
P-389	J-161	T- 5	4537.16	12.00	140.0000	0.00
P-390	J-163	J-165	1360.09	12.00	140.0000	0.00
P-391	J-165	T- 2	1213.11	12.00	140.0000	0.00
P-392	T- 2	@-Pump-DC1	1887.14	12.00	140.0000	0.00
P-393	J-170	J-151	1104.91	12.00	140.0000	0.00
P-394	Pump-DC1	J-170	330.76	12.00	140.0000	0.00
P-395	@-RV-2	J- 23	290.80	10.00	140.0000	0.00
P-396	2179	2074	503792.91	2.50	140.0000	0.00
P-397	2185	2155	813.56	1.00	140.0000	0.00
P-398	Pump-DC2	J-159	3167.53	12.00	140.0000	0.00
P-399	J-159	J-161	8369.39	12.00	140.0000	0.00
P-400	J-167	J-230	9170.00	12.00	140.0000	0.00
P-401	J-230	J-228	73.47	12.00	140.0000	0.00
P-402	Pump-DC3	J-167	10830.12	12.00	140.0000	0.00
P-403	J-228	J-110	8587.99	12.00	140.0000	0.00
P-404	J-108	J- 7	3175.96	6.00	140.0000	0.00
P-405	J- 7	J-173	2400.66	6.00	140.0000	0.00
P-406	J-173	J-176	2543.79	6.00	140.0000	0.00
P-407	J-176	JH-19	1619.03	6.00	140.0000	0.00
P-408	J-177	JH-18	2519.18	5.00	140.0000	0.00
409	J- 37	JH-17	1006.75	5.00	140.0000	0.00
-410	J-179	J-237	1476.93	5.00	140.0000	0.00
P-411	J-237	J-236	30.58	5.00	140.0000	0.00
P-412	J-236	J- 37	267.35	5.00	140.0000	0.00
P-413	@-RV-HC2	J-181	59.07	3.00	140.0000	0.00
P-414	J-242	JW-43	12827.43	6.00	140.0000	0.00
P-415	J-192	J-556	23205.21	6.00	140.0000	0.00
P-416	2075	2077	1198.91	1.00	140.0000	0.00

P-496	2119	2112	8171.99	1.00	140.0000	0.00
P-497	2129	2133	15372.07	1.00	140.0000	0.00
P-498	2548	2134	1624.95	1.00	140.0000	0.00
P-499	2381	2222	4341.53	1.00	140.0000	0.00
P-500	2295	2147	4641.46	1.00	140.0000	0.00
P-501	2132	2137	1861.13	1.00	140.0000	0.00
P-502	2137	2238	2953.77	1.00	140.0000	0.00
P-503	2137	2139	3770.59	1.00	140.0000	0.00
P-504	2139	2142	236.83	1.00	140.0000	0.00
P-505	2139	2141	133.35	1.00	140.0000	0.00
P-506	2142	2140	5645.38	1.00	140.0000	0.00
P-507	2142	2143	109.40	1.00	140.0000	0.00
P-508	2146	JN-19	2799.49	1.00	140.0000	0.00
P-509	J-121	JN-16	16028.16	4.00	140.0000	0.00
P-510	@-Pump-2	JNC-4	4805.32	2.00	140.0000	0.00
P-511	Pump-3	J- 13	1850.06	6.00	140.0000	0.00
P-512	2190	J-121	701.91	1.00	140.0000	0.00
P-513	2150	2154	5697.80	1.50	140.0000	0.00
P-514	2152	JC-46	14330.58	1.00	140.0000	0.00
P-515	2155	J-315	6788.15	1.50	140.0000	0.00
P-516	2155	2273	2462.99	1.50	140.0000	0.00
P-517	2159	2161	8681.43	1.00	140.0000	0.00
P-518	2173	J-127	1020.31	1.00	140.0000	0.00
P-519	@-Pump-6	JC-32	661.89	2.50	140.0000	0.00
P-520	2173	2176	1064.16	1.00	140.0000	0.00
P-522	2176	2177	9095.21	1.50	140.0000	0.00
P-523	2176	2178	125.14	1.00	140.0000	0.00
P-524	2180	JC-29	34969.75	1.00	140.0000	0.00
P-525	2332	2065	9958.58	1.00	140.0000	0.00
P-526	2333	2186	11446.65	1.00	140.0000	0.00
P-527	2329	2184	5689.45	1.00	140.0000	0.00
P-528	J-457	RV-8	16728.13	2.50	140.0000	0.00
P-529	J-457	2182	521.74	2.50	140.0000	0.00
P-530	2182	2183	1193.94	1.00	140.0000	0.00
P-531	2182	2181	7222.36	4.00	140.0000	0.00
P-532	2181	2188	1287.61	1.00	140.0000	0.00
P-533	2181	2179	4644.63	2.50	140.0000	0.00
P-534	2324	2193	3119.15	1.00	140.0000	0.00
P-535	2192	2196	10810.79	1.00	140.0000	0.00
P-536	2192	JCO-2	520.07	1.00	140.0000	0.00
P-537	2194	JCO-4	20310.86	1.00	140.0000	0.00
P-538	J-557	J-192	8627.26	6.00	140.0000	0.00
P-539	J-561	J-241	25070.57	6.00	140.0000	0.00
P-540	J-562	J-561	5794.65	6.00	140.0000	0.00
P-541	J-563	J-562	3318.26	6.00	140.0000	0.00
P-542	J-563	2248	7619.35	6.00	140.0000	0.00
P-543	2198	JCO-7	28306.71	1.00	140.0000	0.00
P-544	2198	2197	15937.83	1.00	140.0000	0.00
P-545	2198	2200	1576.23	1.00	140.0000	0.00
P-546	J-313	J-219	9974.50	12.00	140.0000	0.00
P-547	2204	J-313	5925.47	1.00	140.0000	0.00
P-548	2204	2205	624.80	1.00	140.0000	0.00
P-549	2204	2207	6927.39	1.00	140.0000	0.00
P-550	2407	2206	5802.81	1.00	140.0000	0.00
P-551	JS-5	J-130	569.45	4.00	140.0000	0.00
P-552	J- 39	J-655	1309.56	4.00	140.0000	0.00
P-553	@-Pump-1	J-694	1462.03	4.00	140.0000	0.00
P-554	2216	2213	1030.19	1.00	140.0000	0.00
P-555	2216	2219	1769.20	1.00	140.0000	0.00
P-556	2218	2216	2244.46	1.00	140.0000	0.00
P-557	J-187	J-249	3822.48	4.00	140.0000	0.00
P-558	J-227	J-149	2066.41	4.00	140.0000	0.00
P-559	J-149	J-239	1416.33	4.00	140.0000	0.00
P-560	2426	2224	1449.04	1.00	140.0000	0.00
P-561	J- 8	JL-16	413.79	4.00	140.0000	0.00
P-562	2229	JH-10	113495.98	1.00	140.0000	0.00
P-563	2227	2217	49379.68	1.00	140.0000	0.00
P-564	2217	2228	139.52	1.00	140.0000	0.00
P-565	2217	2228	251.32	1.00	140.0000	0.00
P-566	2228	2231	12197.24	1.00	140.0000	0.00
P-567	2230	JG-14	40668.83	1.00	140.0000	0.00
P-568	2232	2201	1802.91	1.00	140.0000	0.00
P-569	2232	2234	39966.54	1.00	140.0000	0.00
P-570	2233	2235	190425.78	1.00	140.0000	0.00
P-571	2116	2236	781.50	1.00	140.0000	0.00
P-572	2237	2158	16138.30	1.50	140.0000	0.00
P-573	2237	2239	168760.83	1.50	140.0000	0.00
P-574	2238	2138	2391.66	1.00	140.0000	0.00
P-575	2238	2241	33389.62	1.00	140.0000	0.00

P-655	J-489	J-509	119.83	12.00	140.0000	0.00
P-656	J-377	J-398	2621.68	4.00	140.0000	0.00
P-657	J-398	J-395	2060.67	4.00	140.0000	0.00
P-658	J-400	J-377	2010.88	4.00	140.0000	0.00
P-659	J-401	J-400	3882.57	4.00	140.0000	0.00
P-660	J-385	J-407	53.50	12.00	140.0000	0.00
P-661	J-408	J-401	1461.57	4.00	140.0000	0.00
662	J-509	J-344	4370.69	8.00	140.0000	0.00
663	J-364	J-531	6951.31	6.00	140.0000	0.00
P-664	J-364	J-710	5177.95	6.00	140.0000	0.00
P-665	J-512	J-525	43614.38	6.00	140.0000	0.00
P-666	J-413	J-417	1944.21	1.00	140.0000	0.00
P-667	J-417	J-410	1088.32	1.00	140.0000	0.00
P-668	J-413	J-746	4842.75	6.00	140.0000	0.00
P-669	J-656	J-416	299.51	1.00	140.0000	0.00
P-670	J-418	J-121	44318.85	4.00	140.0000	0.00
P-671	J-512	J-418	10779.18	6.00	140.0000	0.00
P-672	J-395	JN-3	6616.58	4.00	140.0000	0.00
P-673	J-419	J-657	10182.62	8.00	140.0000	0.00
P-674	J-420	J-658	15018.76	8.00	140.0000	0.00
P-675	J-421	J-659	7422.37	8.00	140.0000	0.00
P-676	J-422	J-423	14790.04	8.00	140.0000	0.00
P-677	J-423	J-509	4271.40	8.00	140.0000	0.00
P-678	J-424	J-556	23667.27	4.00	140.0000	0.00
P-679	J-425	J-426	4857.96	6.00	140.0000	0.00
P-680	J-426	J-428	5836.79	6.00	140.0000	0.00
P-681	J-427	J-521	3400.51	6.00	140.0000	0.00
P-682	J-436	J-440	7684.70	6.00	140.0000	0.00
P-683	J-458	J-650	11353.94	6.00	140.0000	0.00
P-684	J-468	@-Pump-3	2715.39	6.00	140.0000	0.00
P-685	J-482	JS-21	7941.88	12.00	140.0000	0.00
P-686	J- 55	T- 10	2318.65	10.00	140.0000	0.00
P-687	J-456	JC-26	3603.46	10.00	140.0000	0.00
P-688	@-RV-8	JC-27	1404.55	2.50	140.0000	0.00
P-689	Pump-4	J-503	3832.81	4.00	140.0000	0.00
P-690	J-503	2159	11792.60	4.00	140.0000	0.00
P-691	Pump-5	2237	21768.84	2.50	140.0000	0.00
P-697	J-518	J-413	6445.33	6.00	140.0000	0.00
P-699	J-520	J-425	7371.87	6.00	140.0000	0.00
700	J-521	J-526	8194.39	6.00	140.0000	0.00
701	J-522	J-520	1526.08	6.00	140.0000	0.00
P-702	J-528	J-372	8812.21	6.00	140.0000	0.00
P-703	J-525	J-378	22991.34	6.00	140.0000	0.00
P-704	J-528	J-468	2947.99	6.00	140.0000	0.00
P-705	J-529	J-514	1223.19	6.00	140.0000	0.00
P-706	J-530	J-529	2193.80	6.00	140.0000	0.00
P-707	J-531	J-530	12354.83	6.00	140.0000	0.00
P-733	J-440	J-458	10238.71	6.00	140.0000	0.00
P-734	J-650	RV-7	12209.42	6.00	140.0000	0.00
P-735	J-652	J-691	2767.62	6.00	140.0000	0.00
P-736	J-653	J-436	3354.36	6.00	140.0000	0.00
P-737	J-654	J-681	3132.84	6.00	140.0000	0.00
P-738	@-RV-6	J-666	2797.22	6.00	140.0000	0.00
P-739	J-656	J-419	5965.88	8.00	140.0000	0.00
P-740	J-657	J-420	2694.83	8.00	140.0000	0.00
P-741	J-658	J-421	8367.72	8.00	140.0000	0.00
P-742	J-659	J-422	5337.40	8.00	140.0000	0.00
P-744	J-666	J-416	4309.07	6.00	140.0000	0.00
P-745	J-678	RV-6	2855.93	6.00	140.0000	0.00
P-746	J-681	J-678	2787.49	6.00	140.0000	0.00
P-747	J-683	J-654	4641.83	6.00	140.0000	0.00
P-748	J-691	J-683	2358.08	6.00	140.0000	0.00
P-750	J-428	J-427	4868.31	6.00	140.0000	0.00
P-751	J-655	J-692	1541.58	4.00	140.0000	0.00
P-752	J-692	T- 16	4346.38	4.00	140.0000	0.00
P-753	I- 16	Pump-1	507.33	4.00	140.0000	0.00
P-754	J-694	J-695	11502.92	4.00	140.0000	0.00
P-755	J-695	J-697	2973.55	4.00	140.0000	0.00
P-756	J-696	J-698	5386.49	4.00	140.0000	0.00
P-757	J-697	J-696	2825.95	4.00	140.0000	0.00
P-758	J-698	J-699	2826.79	4.00	140.0000	0.00
759	J-699	J-700	3422.46	4.00	140.0000	0.00
760	J-700	J-701	4993.99	4.00	140.0000	0.00
P-761	J-701	J-702	3231.28	4.00	140.0000	0.00
P-762	J-702	J-130	2480.22	4.00	140.0000	0.00
P-767	J-707	J-378	5210.77	4.00	140.0000	0.00
P-768	J-372	J-709	3212.93	6.00	140.0000	0.00
P-769	J-709	J-491	6439.84	6.00	140.0000	0.00
P-770	J-710	J-522	6087.44	6.00	140.0000	0.00

2077		2.00	2029.98
2078	CommunityHal	0.00	2013.61
2079		0.00	1986.97
2080		0.00	2239.96
2081		0.00	1981.95
2082		2.00	2003.47
2083		0.00	2015.51
2088		2.00	2294.84
2090		0.00	2302.00
2091		0.00	2343.96
2093		0.00	2493.47
2094		0.00	2343.89
2096		0.00	2227.46
2098		0.00	2368.20
2099		0.00	2304.39
2102		0.00	2416.07
2104		0.00	2363.68
2105		0.00	2258.36
2106		0.00	2205.38
2107		0.00	2282.38
2108		0.00	2359.08
2109		0.00	2358.13
2110		0.00	2320.30
2111		0.00	2442.25
2112		2.00	2397.53
2113		2.00	2332.41
2114		2.00	2472.67
2115		2.00	2480.44
2116		2.00	2432.97
2117		2.00	2451.44
2119		0.00	2268.47
2121		0.00	2511.81
2125		2.00	2329.56
2126		0.00	2588.22
2127		0.00	2603.01
2129		0.00	2467.68
2130		0.00	2546.55
2132		0.00	2416.66
2133		0.00	2438.02
2134		0.00	2438.22
2137		0.00	2432.67
2138		0.00	2443.53
2139		0.00	2421.98
2140		0.00	2480.74
2141		0.00	2426.60
2142		0.00	2426.37
2143		0.00	2418.30
2145		2.00	2829.92
2146		0.00	2558.26
2147		2.00	2288.02
2150		2.00	2749.67
2152		0.00	2714.56
2154		2.00	2722.07
2155		0.00	2728.44
2158		2.00	3207.70
2159		0.00	2843.27
2161		2.00	2670.30
2163		2.00	2689.89
2173		0.00	2782.67
2176		0.00	2760.85
2177		0.00	2816.27
2178		0.00	2750.85
2179		2.00	2337.63
2180		2.00	2427.85
2181		0.00	2293.53
2182		0.00	2350.09
2183		2.00	2387.23
2184		0.00	2611.05
2185		2.00	2735.00
2186		2.00	2771.35
2187		2.00	2274.96
2188		2.00	2400.13
2190		0.00	2574.93
2191		0.00	2419.16
2192		0.00	2758.79
2193		0.00	2558.95
2194		0.00	2864.13
2195		2.00	2423.68
2196		4.00	2676.04

J- 8		0.00	2379.00
J- 12		0.00	2437.00
J- 14		0.00	2376.88
J- 15		0.00	2303.28
J- 16		0.00	2338.54
J- 20		0.00	2239.72
J- 21		0.00	2282.00
- 22		0.00	2319.98
J- 23		0.00	2425.49
J- 36		0.00	2846.00
J- 37		0.00	2800.00
J- 39	Steve Forks	0.00	2860.00
J- 40		0.00	2860.00
J- 41		0.00	2773.00
J- 42		0.00	2605.86
J- 43		0.00	2400.04
J- 44		0.00	2840.00
J- 45		0.00	2484.57
J- 47		0.00	2540.00
J- 55		0.00	2460.56
J- 58		0.00	2174.00
J- 61		0.00	2446.26
J- 71		0.00	2442.22
J- 72		0.00	2581.00
J- 73		0.00	2926.00
J- 74		0.00	2611.08
J- 75		0.00	2611.00
J- 76		0.00	2596.87
J- 77		0.00	2596.00
J- 78		0.00	2372.56
J- 79		0.00	2372.00
J- 80		0.00	3020.00
J- 81		0.00	2377.00
J- 83	Maniage Spri	0.00	2686.00
J- 84		0.00	2610.55
J- 85		0.00	2690.00
J- 86		0.00	2620.00
J- 87		0.00	2548.00
J- 88		0.00	2548.63
- 89		0.00	2631.00
J- 91		0.00	2613.14
J- 98		0.00	2493.62
J-101		0.00	2421.00
J-103		0.00	2450.39
J-104		0.00	2800.00
J-108		0.00	2682.97
J-109		0.00	2322.44
J-110		0.00	3185.00
J-114		0.00	2318.00
J-115		0.00	2600.00
J-116		0.00	2345.00
J-117		0.00	2978.00
J-118		0.00	3000.00
J-119		0.00	2807.19
J-120		0.00	2415.00
J-121		2.00	2574.93
J-122		0.00	2655.88
J-123		0.00	2422.38
J-124		0.00	2422.00
J-125		0.00	2422.00
J-126		0.00	2466.07
J-127		2.00	2824.53
J-128	Wolf Point R	0.00	2204.42
J-129		0.00	3020.00
J-130		6.00	3000.00
J-131		0.00	2500.00
J-133		0.00	2500.00
J-134		0.00	2957.00
J-135		0.00	2985.00
J-137		0.00	2990.00
J-138		0.00	3036.00
-143		0.00	3063.00
J-145		0.00	3020.00
J-147		0.00	3018.00
J-148		0.00	2478.83
J-149		0.00	2340.00
J-151		0.00	3358.00
J-153		0.00	3222.00
J-155		0.00	3138.00

J-305		0 00	2093 20
J-313		0 00	2999 00
J-315		0.00	2660.34
J-319		0.00	2457.38
J-322		2 00	2700 00
J-326		0 00	2306 33
J-341		0.00	2500 00
-344		0.00	2540.00
J-345		2.00	2361.00
J-361		0 00	2418.00
J-364		0 00	2361 00
J-367		0.00	2500 00
J-368		4.00	2538 00
J-372		2.00	2820.00
J-377		0 00	2500.00
J-378		0 00	2383.00
J-380		0.00	2312 00
J-385		0.00	2368 00
J-386		0 00	2470 00
J-394		0 00	2360.00
J-395		0.00	2465.00
J-398		0.00	2509 00
J-400		0 00	2446 00
J-401		0.00	2425 00
J-407		0 00	2368 00
J-408		0 00	2368.00
J-410		2.00	2200.00
J-413		0.00	2140.00
J-416		0.00	2548 00
J-417		0 00	2200 00
J-418		0 00	2560.00
J-419		0 00	2568.00
J-420		0.00	2500.00
J-421		0.00	2564.00
J-422		0 00	2441.00
J-423		0 00	2515 00
J-424		0 00	2072.40
J-425		0 00	2429.00
J-426		0.00	2472.00
-427		0.00	2417.00
J-428		0.00	2534 00
J-436		0 00	2134.00
J-440		0 00	2180 00
J-456		0 00	2502.02
J-457		0.00	2361.64
J-458		0.00	2100.00
J-468		2.00	2500.00
J-482		0.00	2838 87
J-487		0.00	2640 00
J-489	Lower Summit	0 00	2510 00
J-490		0 00	2437 00
J-491		0 00	2700.00
J-503		0 00	2737.00
J-509		0 00	2510.00
J-512		0.00	2560.00
J-514		2.00	2300 00
J-518		0.00	2020 00
J-520		0 00	2420 00
J-521		0 00	2755 00
J-522		0 00	2410.00
J-525		0.00	2590.00
J-526		2.00	2639.00
J-528		2.00	2662 00
J-529		0 00	2300 00
J-530		0 00	2350.00
J-531		0 00	2350.00
J-556	Four Corners	0.00	2102.00
J-557		0.00	2058 00
J-561		2.00	2030 00
J-562		0 00	1989 00
J-563		2 00	1984.00
-568		2.00	2174.00
J-650		0.00	2070.00
J-652		0.00	2231.00
J-653		0 00	2260 00
J-654		0 00	2304 00
J-655		0.00	2860.00
J-656		0.00	2548.00
J-657		0.00	2550.00

JC-39		2.00	2642.43
JC-40		2.00	2741.39
JC-41		4.00	2762.55
JC-44		2.00	2636.96
JC-45		4.00	2693.18
JC45A		0.00	2740.00
JC-46		4.00	2731.00
C-47		0.00	2675.00
JC-48		0.00	2628.00
JC-49		2.00	2570.00
JC-5		4.00	2664.67
JC-50		4.00	2571.75
JC-51		4.00	2542.98
JC-52		5.00	2450.98
JC-53		4.00	2534.62
JC-54		2.00	2536.82
JC-54A		300.00	2430.15
JC-55		2.00	2499.06
JC-56		2.00	2476.79
JC-58		2.00	2452.65
JC-59		4.00	2443.90
JC-6		2.00	2585.59
JC-7		2.00	2671.17
JC-7A		2.00	2661.16
JC-8		2.00	2683.40
JC-8A		2.00	2564.93
JC-9		2.00	2529.80
JCO-1		5.00	2724.50
JCO-10		2.00	2717.32
JCO-11		5.00	2592.77
JCO-12		5.00	2601.04
JCO-13		2.00	2616.00
JCO-14		2.00	2636.00
JCO-15		2.00	2658.47
JCO-2		2.00	2741.00
JCO-3		4.00	2761.73
JCO-4		4.00	2776.00
JCO-5		4.00	2892.00
JCO-6		2.00	2957.83
CO-7		4.00	2986.31
JCO-8		4.00	2999.69
JCO-9		2.00	2752.84
JD-1		0.00	2685.47
JD-1Ann		0.00	2623.74
JD-2	Well Capacit	250.00	2606.03
JD-3		0.00	2580.00
JD-4		0.00	2669.89
JdnBstr		0.00	2862.00
JdnCirBst1		0.00	2660.00
JdnCirBst2		0.00	2500.00
JdnCirBst3		0.00	2600.00
JdnCirBst4		0.00	2451.90
JG-1		6.00	2881.58
JG-10		2.00	2950.00
JG-11		2.00	3200.00
JG-12		2.00	3065.00
JG-13		4.00	2980.00
JG-14	Brusett Chur	2.00	3012.91
JG-2		2.00	2997.85
JG-3		10.00	3194.46
JG-4		2.00	3150.00
JG-5		0.00	3100.00
JG-7		2.00	3099.01
JG-8		0.00	2980.00
JH-1		2.00	2281.99
JH-10		4.00	2826.74
JH-11		2.00	2797.68
JH-12		2.00	2810.40
JH-13		2.00	2774.00
JH-14		4.00	2750.00
JH-149		2.00	2658.00
H-15		2.00	2755.00
JH-16		2.00	2833.13
JH-17		2.00	2840.81
JH-18		2.00	2774.00
JH-19		2.00	2647.00
JH-2		2.00	2268.94
JH-3		2.00	2250.00
JH-8		6.00	2938.06

JS-10		2 00	2976.17	
JS-11		2.00	3042.00	
JS-13		5.00	2851 00	
JS-16		2 00	2772 00	
JS-18		2.00	2860.59	
JS-2		2.00	3134.00	
JS-20		2 00	2860 00	
'S-21		4.00	2813 00	
,S-22		4.00	2750.00	
JS-23		2 00	2740.00	
JS-24		4.00	2670 00	
JS-3		2.00	3140 00	
JS-4		4.00	3044.00	
JS-5		6 00	3000.00	
JS-6		6.00	3038 00	
JS-7		2.00	2850 00	
JS-8		4 00	2975.00	
JS-9		2.00	3048.23	
JW-10		2.00	2593 89	
JW-11		2 00	2472.60	
JW-12A		2 00	2548.00	
JW-13		4.00	2498.11	
JW-14		2.00	2496.41	
JW-15		2.00	2394 01	
JW-16		2 00	2518.12	
JW-17		2.00	2516.51	
JW-18		2.00	2360 22	
JW-19		2.00	2380.00	
JW-2		5 00	2422.38	
JW-20		2.00	2366 59	
JW-21		5.00	2445 93	
JW-22		2 00	2541.93	
JW-23		5 00	2443.63	
JW-24		2.00	2407 00	
JW-25		5.00	2414.05	
JW-27		2 00	2405.78	
JW-28		2.00	2356.29	
JW-29		2.00	2369.34	
JW-3		2.00	2396.14	
W-31		4 00	2395.45	
JW-32		2.00	2416.24	
JW-33		2.00	2406 47	
JW-34		4 00	2477.25	
JW-35		5 00	2363.93	
JW-36		2 00	2298.98	
JW-37		4 00	2276 09	
JW-38		2.00	2231.22	
JW-39		2.00	2302.13	
JW-40		2 00	2256.97	
JW-42		6 00	2139 84	
JW-43		5 00	2054 53	
JW-44		0 00	2566 53	
JW-6		2.00	2421.59	
JW-6A		4 00	2477.00	
JW-7		0 00	2516 94	
JW-8		2 00	2397 88	
JW-9		2.00	2477 94	
JW-9A		2 00	2424.00	
JWP-1	Wolf Point D	260 00	1997.00	
JWP-2		2.00	1985 00	
JWP-3		2.00	1980 00	
JWP-4		2 00	1984.00	
JWP-5	Air Port	2 00	1985.00	
JWP-6		2.00	1980 00	
JWP-7	L&C Campgrou	4.00	1987 00	
Pump-1		0 00	3000.00	
Pump-2		0.00	2685.52	
Pump-3		0.00	2500 00	
Pump-4		0 00	2667 00	
Pump-5		0 00	2877.00	
Pump-6		0.00	2451 00	
P -DC1		0.00	3240 00	
Pump-DC2		0 00	3209.00	
Pump-DC3		0.00	3200.00	
R- 1		----	2240.00	2250 00
icheyBstr		0 00	2686 68	
RV-1		0 00	2750.00	
RV-2		----	2429.27	2613.88
RV-3		0.00	2239.00	

P- 13	JBL-27	JBL-28	5.00	0.06	0.00	0.13	0.03	0.03
P- 14	JW-7	JW-8	479.20	7.11	0.00	1.96	1.38	1.38
P- 15	JR-29	JR-30	16.91	0.03	0.00	0.11	0.01	0.01
P- 16	JL-6	JL-7	55.00	23.15	0.00	1.40	2.16	2.16
P- 17	JL-9	JL-10	41.00	15.43	0.00	1.05	1.26	1.26
P- 18	JL-12	JL-13	31.00	8.01	0.00	0.79	0.75	0.75
P- 19	JL-13	JL-14	27.00	4.45	0.00	0.69	0.58	0.58
20	JL-14	JL-15	25.00	3.98	0.00	0.64	0.50	0.50
21	JL-16	JL-35	17.00	0.05	0.00	0.11	0.01	0.01
P- 22	JD-1Ann	J- 85	0.00	0.00	0.00	0.00	0.00	0.00
P- 23	JS-6	JS-5	20.86	3.33	0.00	0.53	0.36	0.36
P- 24	JH-2	JH-1	2.00	0.06	0.00	0.09	0.02	0.02
P- 25	JS-7	JS-6	26.86	2.18	0.00	0.69	0.57	0.57
P- 26	JS-10	JS-9	34.86	2.09	0.00	0.89	0.93	0.93
P- 27	JS-20	JS-21	1414.09	9.16	0.00	4.01	4.20	4.20
P- 28	J- 87	J- 88	465.20	0.14	0.00	2.97	3.86	3.86
P- 29	J-123	JW-2	792.20	4.28	0.00	3.24	3.49	3.49
P- 30	JW-2	J- 23	300.00	0.33	0.00	1.23	0.58	0.58
P- 31	JC-54A	J-101	0.00	0.00	0.00	0.00	0.00	0.00
P- 32	JW-40	J- 21	280.63	5.92	0.00	1.79	1.51	1.51
P- 33	R- 1	Intake	302.41	0.40	0.00	0.86	0.24	0.24
P- 34	2195	2215	2.00	13.55	0.00	0.82	4.00	4.00
P- 35	JD-1Ann	JD-1	256.47	0.36	0.00	1.05	0.43	0.43
P- 36	JR-21	JR-22	24.91	0.02	0.00	0.16	0.02	0.02
P- 37	J- 79	J- 61	18.91	0.10	0.00	0.12	0.01	0.01
P- 38	JC-33	JC-34	952.53	11.58	0.00	3.89	4.91	4.91
P- 39	JC-34	J- 47	950.53	7.44	0.00	3.88	4.89	4.89
P- 40	JC-35	JC-36	985.37	45.62	0.00	4.02	5.23	5.23
P- 41	JC-38	JC-39	979.37	16.28	0.00	4.00	5.17	5.17
P- 42	JC-39	J-216	977.37	41.10	0.00	3.99	5.15	5.15
P- 43	JC-1	JC-2	1046.87	15.40	0.00	4.28	5.85	5.85
P- 44	JC-2	JC-3	1044.87	47.63	0.00	4.27	5.83	5.83
P- 45	T- 9	JdnCirBst1	1075.44	1.04	0.00	4.39	6.15	6.15
P- 46	JD-1Ann	JC-1	1048.87	18.82	0.00	4.28	5.87	5.87
P- 47	JC-5	JC-6	1071.44	22.12	0.00	4.38	6.10	6.10
P- 48	JC-7	JC-7A	1067.44	37.87	0.00	4.36	6.06	6.06
P- 49	JC-8	JC-9	1059.44	27.48	0.00	4.33	5.98	5.98
P- 50	JC-11	JC-12	1049.44	91.68	0.00	4.29	5.87	5.87
P- 51	JC-10	JC-11	1051.44	22.58	0.00	4.29	5.89	5.89
52	JC-12	JC-13	1047.44	20.90	0.00	4.28	5.85	5.85
53	JC-15	JC-16	1041.44	34.06	0.00	4.25	5.79	5.79
P- 54	JC-16	JC-17	1039.44	12.39	0.00	4.25	5.77	5.77
P- 55	JC-17	JC-18	1037.44	35.91	0.00	4.24	5.75	5.75
P- 56	JC-18	JC-19	1033.44	12.66	0.00	4.22	5.71	5.71
P- 57	JC-6	J-210	1069.44	6.84	0.00	4.37	6.08	6.08
P- 58	JC-19	JC-20	1027.44	3.27	0.00	4.20	5.65	5.65
P- 59	JC-21	JC-22	1019.44	46.42	0.00	4.16	5.57	5.57
P- 60	JC-22	JC-23	1017.44	52.04	0.00	4.16	5.55	5.55
P- 61	JC-23	JC-24	1015.44	6.63	0.00	4.15	5.53	5.53
P- 62	JC-24	JC-25	1013.44	25.61	0.00	4.14	5.51	5.51
P- 63	JC-25	J- 55	1009.44	18.39	0.00	4.12	5.47	5.47
P- 64	JC-26	JC-27	984.53	20.52	0.00	4.02	5.22	5.22
P- 65	JC-27	J-212	974.53	21.97	0.00	3.98	5.12	5.12
P- 66	JC-28	J-214	972.53	44.77	0.00	3.97	5.10	5.10
P- 67	JC-29	JC-30	968.53	65.28	0.00	3.96	5.06	5.06
P- 68	JR-5	JR-6	46.91	1.24	0.00	0.53	0.22	0.22
P- 69	JC-30	JC-31	964.53	38.91	0.00	3.94	5.02	5.02
P- 70	JC-31	JC-31A	962.53	18.45	0.00	3.93	5.01	5.01
P- 71	JC-36	JC-37	983.37	14.03	0.00	4.02	5.21	5.21
P- 72	JC-37	JC-38	981.37	9.59	0.00	4.01	5.19	5.19
P- 73	JC-40	JC-41	975.37	20.06	0.00	3.98	5.13	5.13
P- 74	JC-41	J-119	971.37	33.63	0.00	3.97	5.09	5.09
P- 75	J-119	J-273	971.37	6.31	0.00	3.97	5.09	5.09
P- 76	J-273	J-278	971.37	1.34	0.00	3.97	5.09	5.09
P- 77	JC-44	JC-45	963.37	45.01	0.00	3.94	5.01	5.01
P- 78	JC-50	JC-51	941.37	67.17	0.00	3.85	4.80	4.80
P- 79	JL-15	J- 8	21.00	0.51	0.00	0.54	0.36	0.36
P- 80	JC-51	JC-53	937.37	32.86	0.00	3.83	4.77	4.77
P- 81	JC-53	JC-54	933.37	14.93	0.00	3.81	4.73	4.73
P- 82	JC-54	JC-55	931.37	33.65	0.00	3.80	4.71	4.71
P- 83	JC-55	JC-56	929.37	45.96	0.00	3.80	4.69	4.69
84	JC-56	T- 12	927.37	24.21	0.00	3.79	4.67	4.67
85	JdnCirBst4	JC-58	915.18	39.39	0.00	3.74	4.56	4.56
P- 86	JC-58	JC-59	913.18	6.55	0.00	3.73	4.54	4.54
P- 87	JW-9	JW-9A	475.20	2.91	0.00	1.94	1.35	1.35
P- 88	JW-3	J-287	485.20	6.63	0.00	1.98	1.41	1.41
P- 89	JR-4	JR-5	48.91	0.64	0.00	0.55	0.24	0.24
P- 90	JL-8	JL-9	43.00	1.72	0.00	1.10	1.37	1.37
P- 91	JR-18	JR-19	28.91	0.10	0.00	0.18	0.02	0.02

P-171	JR-1	JR-2	54.91	0.78	0.00	0.62	0.30	0.30
P-172	JW-2	JW-3	487.20	6.09	0.00	1.99	1.42	1.42
P-173	JR-12	JR-13	32.91	0.20	0.00	0.21	0.03	0.03
P-174	JR-13	JR-14	30.91	0.14	0.00	0.20	0.03	0.03
P-175	JR-37	JR-38	14.91	0.02	0.00	0.10	0.01	0.01
P-176	JN-3	JN-1	2.00	0.12	0.00	0.09	0.02	0.02
P-177	JN-12	J- 42	26.99	21.78	0.00	1.22	2.35	2.35
178	JR-38	JR-39	14.91	0.01	0.00	0.10	0.01	0.01
179	J-234	JD-1Ann	1305.33	17.25	0.00	3.70	3.62	3.62
P-180	J-131	J-133	16.91	0.00	0.00	0.11	0.01	0.01
P-181	JR-31	JR-32	16.91	0.03	0.00	0.11	0.01	0.01
P-182	JR-30	JR-31	16.91	0.04	0.00	0.11	0.01	0.01
P-183	JR-20	JR-21	24.91	0.02	0.00	0.16	0.02	0.02
P-184	JC-31A	JC-32	958.53	8.10	0.00	3.92	4.97	4.97
P-185	J- 61	J- 71	18.91	0.04	0.00	0.12	0.01	0.01
P-186	JC-9	JC-10	1055.44	26.44	0.00	4.31	5.94	5.94
P-187	JC-9	JC-8A	2.00	0.00	0.00	0.01	0.00	0.00
P-188	JC-13	JC-15	1045.44	20.84	0.00	4.27	5.83	5.83
P-189	I- 10	JdnCirBst2	988.53	0.04	0.00	4.04	5.26	5.26
P-190	JC-59	JC-52	909.18	10.26	0.00	3.71	4.50	4.50
P-191	JC-20	JC-21	1025.44	40.79	0.00	4.19	5.63	5.63
P-192	J- 83	J-181	6.00	0.42	0.00	0.27	0.15	0.15
P-193	JH-13	JH-12	22.00	0.67	0.00	0.36	0.13	0.13
P-194	JN-22	JN-21	107.98	7.48	0.00	1.23	1.05	1.05
P-195	JN-24	J-281	109.98	4.13	0.00	1.25	1.08	1.08
P-196	JS-24	J-234	1400.09	5.05	0.00	3.97	4.12	4.12
P-197	JD-3	JD-4	0.00	0.00	0.00	0.00	0.00	0.00
P-198	JD-2	JD-3	0.00	0.00	0.00	0.00	0.00	0.00
P-199	JS-4	JS-3	4.00	0.14	0.00	0.10	0.02	0.02
P-200	JS-5	JS-4	8.00	0.34	0.00	0.20	0.06	0.06
P-201	RV-2	JC-54A	300.00	1.15	0.00	1.23	0.58	0.58
P-202	JS-13	I- 3	32.70	7.35	0.00	0.83	0.83	0.83
P-203	J- 41	JS-16	1195.04	7.89	0.00	3.39	3.07	3.07
P-204	J-171	JS-13	37.70	3.32	0.00	0.96	1.08	1.08
P-205	JR-7	JR-8	42.91	0.24	0.00	0.27	0.05	0.05
P-206	JR-6	JR-7	44.91	1.09	0.00	0.51	0.21	0.21
P-207	JR-8	J- 22	38.91	0.12	0.00	0.25	0.04	0.04
P-208	JR-24	J- 78	18.91	0.01	0.00	0.12	0.01	0.01
P-209	JR-41	JR-43	7.91	0.01	0.00	0.05	0.00	0.00
210	JR-40	JR-41	9.91	0.00	0.00	0.06	0.00	0.00
-211	JR-43	J-199	65.00	0.21	0.00	0.74	0.41	0.41
P-212	JW-31	JR-1	56.91	1.53	0.00	0.65	0.32	0.32
P-213	JL-7	JL-8	45.00	10.25	0.00	1.15	1.49	1.49
P-214	JL-11	JL-12	33.00	4.41	0.00	0.84	0.84	0.84
P-215	JL-2	JL-3	61.00	21.42	0.00	1.56	2.62	2.62
P-216	JL-35	J- 81	15.00	0.01	0.00	0.10	0.01	0.01
P-217	CohagenBst	JCO-15	57.00	20.92	0.00	1.46	2.31	2.31
P-218	JCO-12	JCO-11	46.00	0.42	0.00	1.17	1.55	1.55
P-219	JCO-13	JCO-12	51.00	3.60	0.00	1.30	1.88	1.88
P-220	JCO-8	JCO-7	33.00	6.28	0.00	0.84	0.84	0.84
P-221	JCO-4	JCO-3	15.00	1.71	0.00	0.38	0.20	0.20
P-222	JN-19	J-122	97.98	2.93	0.00	1.11	0.88	0.88
P-223	JL-1	J-200	63.00	18.63	0.00	1.61	2.78	2.78
P-224	J-104	J-134	283.96	1.32	0.00	0.81	0.21	0.21
P-225	J- 81	JL-36	15.00	0.00	0.00	0.10	0.01	0.01
P-226	JR-2	JR-3	52.91	0.79	0.00	0.60	0.28	0.28
P-227	J-170	2218	2.00	0.00	0.00	0.01	0.00	0.00
P-228	JS-8	JS-7	28.86	8.23	0.00	0.74	0.66	0.66
P-229	JR-3	JR-4	50.91	0.63	0.00	0.58	0.26	0.26
P-230	JR-9	JR-10	36.91	0.29	0.00	0.24	0.04	0.04
P-231	JR-10	J-109	34.91	0.24	0.00	0.22	0.03	0.03
P-232	J-109	RV-5	34.91	0.00	0.00	0.22	0.03	0.03
P-233	JR-14	JR-15	28.91	0.10	0.00	0.18	0.02	0.02
P-234	I- 5	Pump-DC3	1391.89	0.20	0.00	3.95	4.08	4.08
P-235	J-124	J-123	904.18	0.68	0.00	3.69	4.46	4.46
P-236	J-134	J-135	283.96	0.91	0.00	0.81	0.21	0.21
P-237	JR-32	JR-33	16.91	0.01	0.00	0.11	0.01	0.01
P-238	J- 78	J- 79	18.91	0.00	0.00	0.12	0.01	0.01
P-239	J-133	JR-35	16.91	0.05	0.00	0.11	0.01	0.01
P-240	J-288	J- 45	109.98	4.37	0.00	1.25	1.08	1.08
P-241	JCO-10	JCO-9	39.00	6.05	0.00	1.00	1.14	1.14
242	I- 6	JdnBstr	1418.09	1.48	0.00	4.02	4.22	4.22
-243	J-147	J-163	283.96	10.16	0.00	1.81	1.55	1.55
P-244	JL-3A	JL-4	57.00	0.16	0.00	1.46	2.31	2.31
P-245	JL-5	J-116	57.00	1.43	0.00	1.46	2.31	2.31
P-246	JR-36	JR-37	14.91	0.02	0.00	0.10	0.01	0.01
P-247	JR-35	JR-36	16.91	0.01	0.00	0.11	0.01	0.01
P-248	JR-39	JR-40	9.91	0.00	0.00	0.06	0.00	0.00
P-249	JBL-11	JBL-12	19.00	0.37	0.00	0.49	0.30	0.30

P-329	JN-10	JN-9	20.99	11.81	0.00	0.95	1.48	1.48
P-330	J-487	J-286	28.99	0.23	0.00	0.33	0.09	0.09
P-331	JNC-4	J-487	28.99	0.59	0.00	0.33	0.09	0.09
P-332	J-125	J-490	111.98	5.75	0.00	1.27	1.12	1.12
P-333	JN-17	JN-16	95.98	2.58	0.00	1.09	0.84	0.84
P-334	JN-20	JN-19	103.98	9.19	0.00	1.18	0.98	0.98
P-335	JN-21	JN-20	105.98	167.61	0.00	4.81	29.60	29.60
336	JN-23	JN-22	109.98	15.54	0.00	1.25	1.08	1.08
337	JW-6A	JW-7	479.20	2.97	0.00	1.96	1.38	1.38
P-338	JW-9A	JW-10	473.20	7.58	0.00	1.93	1.34	1.34
P-339	JW-43	JWP-7	274.00	5.48	0.00	1.75	1.45	1.45
P-340	JWP-4	JWP-3	264.00	7.36	0.00	1.68	1.35	1.35
P-341	JWP-3	JWP-2	262.00	3.61	0.00	1.67	1.33	1.33
P-342	JWP-2	JWP-1	260.00	7.01	0.00	1.66	1.31	1.31
P-343	JWP-5	JWP-4	266.00	5.83	0.00	1.70	1.37	1.37
P-344	JWP-6	JWP-5	268.00	13.57	0.00	1.71	1.39	1.39
P-345	JWP-7	JWP-6	270.00	3.16	0.00	1.72	1.41	1.41
P-346	JW-44	J- 3	298.63	7.87	0.00	1.91	1.70	1.70
P-347	J-110	JG-14	1391.89	9.36	0.00	3.95	4.08	4.08
P-348	J- 3	J- 14	298.63	5.11	0.00	1.91	1.70	1.70
P-349	J- 14	J- 15	298.63	7.20	0.00	1.91	1.70	1.70
P-350	J- 15	J- 1	298.63	6.58	0.00	1.91	1.70	1.70
P-351	J- 16	JW-37	292.63	8.11	0.00	1.87	1.64	1.64
P-352	RV-3	J- 20	270.63	0.79	0.00	1.73	1.42	1.42
P-353	J- 20	J-128	270.63	1.79	0.00	1.73	1.42	1.42
P-354	J-103	JW-9	477.20	11.49	0.00	1.95	1.36	1.36
P-355	J-114	J-115	302.41	0.65	0.00	0.86	0.24	0.24
P-356	J- 22	J- 43	38.91	0.19	0.00	0.25	0.04	0.04
P-357	J- 43	JR-9	38.91	0.16	0.00	0.25	0.04	0.04
P-358	J- 76	J- 75	64.09	7.20	0.00	1.64	2.87	2.87
P-359	JBL-7A	J- 77	64.09	12.71	0.00	1.64	2.87	2.87
P-360	J-135	J-137	283.96	0.75	0.00	0.81	0.21	0.21
P-361	J- 86	J-108	6.47	0.01	0.00	0.07	0.01	0.01
P-362	JD-1	J- 86	6.47	0.00	0.00	0.07	0.01	0.01
P-363	J-137	J-143	283.96	0.95	0.00	0.81	0.21	0.21
P-364	I- 14	WolfPtBstr	427.54	0.06	0.00	2.73	3.30	3.30
P-365	J-138	J- 80	283.96	1.09	0.00	0.81	0.21	0.21
P-366	J-118	JG-11	32.00	2.50	0.00	0.82	0.79	0.79
P-367	J-235	JC-5	1075.44	4.78	0.00	4.39	6.15	6.15
368	JR-33	J- 98	16.91	0.01	0.00	0.11	0.01	0.01
369	RicheyBstr	JBL-9	21.00	1.12	0.00	0.54	0.36	0.36
P-370	J-101	JN-25	0.00	0.00	0.00	0.00	0.00	0.00
P-371	J- 98	J-131	16.91	0.00	0.00	0.11	0.01	0.01
P-372	2240	J-103	0.00	0.00	0.00	0.00	0.00	0.00
P-373	J-490	J- 12	111.98	0.75	0.00	1.27	1.12	1.12
P-374	J-123	J-125	111.98	6.83	0.00	5.08	32.78	32.78
P-375	J-115	I- 1	302.41	1.16	0.00	0.86	0.24	0.24
P-376	Intake	J-207	302.41	0.21	0.00	0.86	0.24	0.24
P-377	T- 1	WTP-HS	283.96	0.25	0.00	0.81	0.21	0.21
P-378	WTP-HS	J-104	283.96	0.20	0.00	0.81	0.21	0.21
P-379	WolfPtBstr	JW-22	427.54	6.91	0.00	2.73	3.30	3.30
P-380	J-143	J-138	283.96	0.57	0.00	0.81	0.21	0.21
P-381	J-145	J-147	283.96	0.77	0.00	0.81	0.21	0.21
P-382	J- 80	J-145	283.96	0.32	0.00	0.81	0.21	0.21
P-383	J- 80	J-129	0.00	0.00	0.00	0.00	0.00	0.00
P-384	J-151	J-153	1092.35	26.87	0.00	3.10	2.60	2.60
P-385	J-153	J-155	1092.35	32.87	0.00	3.10	2.60	2.60
P-386	J-155	J-157	1092.35	26.29	0.00	3.10	2.60	2.60
P-387	J-157	T- 4	1092.35	7.68	0.00	3.10	2.60	2.60
P-388	T- 4	Pump-DC2	1939.00	0.89	0.00	5.50	7.54	7.54
P-389	J-161	T- 5	1939.00	34.19	0.00	5.50	7.54	7.54
P-390	J-163	J-165	283.96	0.29	0.00	0.81	0.21	0.21
P-391	J-165	T- 2	283.96	0.26	0.00	0.81	0.21	0.21
P-392	T- 2	Pump-DC1	1094.35	4.93	0.00	3.10	2.61	2.61
P-393	J-170	J-151	1092.35	2.88	0.00	3.10	2.60	2.60
P-394	Pump-DC1	J-170	1094.35	0.86	0.00	3.10	2.61	2.61
P-395	J- 23	RV-2	300.00	0.17	0.00	1.23	0.58	0.58
P-396	2179	2074	0.00	0.00	0.00	0.00	0.00	0.00
P-397	2155	2185	2.00	3.25	0.00	0.82	4.00	4.00
P-398	Pump-DC2	J-159	1939.00	23.87	0.00	5.50	7.54	7.54
P-399	J-159	J-161	1939.00	63.07	0.00	5.50	7.54	7.54
400	J-167	J-230	1391.89	37.40	0.00	3.95	4.08	4.08
401	J-230	J-228	1391.89	0.30	0.00	3.95	4.08	4.08
P-402	Pump-DC3	J-167	1391.89	44.17	0.00	3.95	4.08	4.08
P-403	J-228	J-110	1391.89	35.02	0.00	3.95	4.08	4.08
P-404	J-108	J- 7	6.47	0.02	0.00	0.07	0.01	0.01
P-405	J- 7	J-173	6.47	0.01	0.00	0.07	0.01	0.01
P-406	J-173	J-176	6.47	0.01	0.00	0.07	0.01	0.01
P-407	J-176	JH-19	6.47	0.01	0.00	0.07	0.01	0.01

P-487	2105	2106	0.00	0.00	0.00	0.00	0.00	0.00
P-488	2105	2107	0.00	0.00	0.00	0.00	0.00	0.00
P-489	2108	2104	4.00	2.66	0.00	0.26	0.17	0.17
P-490	2108	2110	0.00	0.00	0.00	0.00	0.00	0.00
P-491	2111	2108	4.00	0.88	0.00	0.26	0.17	0.17
P-492	2111	2263	2.00	3.07	0.00	0.82	4.00	4.00
P-493	2569	2119	4.00	33.26	0.00	1.63	14.43	14.43
494	J-126	2114	6.00	8.34	0.00	2.45	30.57	30.57
495	2114	2264	4.00	23.27	0.00	1.63	14.43	14.43
P-496	2119	2112	4.00	117.89	0.00	1.63	14.43	14.43
P-497	2129	2133	0.00	0.00	0.00	0.00	0.00	0.00
P-498	2548	2134	0.00	0.00	0.00	0.00	0.00	0.00
P-499	2381	2222	2.00	17.35	0.00	0.82	4.00	4.00
P-500	2295	2147	2.00	18.55	0.00	0.82	4.00	4.00
P-501	2132	2137	0.00	0.00	0.00	0.00	0.00	0.00
P-502	2137	2238	0.00	0.00	0.00	0.00	0.00	0.00
P-503	2137	2139	0.00	0.00	0.00	0.00	0.00	0.00
P-504	2139	2142	0.00	0.00	0.00	0.00	0.00	0.00
P-505	2139	2141	0.00	0.00	0.00	0.00	0.00	0.00
P-506	2142	2140	0.00	0.00	0.00	0.00	0.00	0.00
P-507	2142	2143	0.00	0.00	0.00	0.00	0.00	0.00
P-508	JN-19	2146	2.00	11.19	0.00	0.82	4.00	4.00
P-509	JN-16	J-121	54.99	34.68	0.00	1.40	2.16	2.16
P-510	JNC-4	Pump-2	4.00	2.37	0.00	0.41	0.49	0.49
P-511	I- 13	Pump-3	98.01	1.62	0.00	1.11	0.88	0.88
P-512	2190	J-121	0.00	0.00	0.00	0.00	0.00	0.00
P-513	2150	2154	2.00	3.16	0.00	0.36	0.55	0.55
P-514	2152	JC-46	0.00	0.00	0.00	0.00	0.00	0.00
P-515	J-315	2155	6.00	28.80	0.00	1.09	4.24	4.24
P-516	2155	2273	4.00	4.93	0.00	0.73	2.00	2.00
P-517	2159	2161	2.00	34.69	0.00	0.82	4.00	4.00
P-518	2173	J-127	0.00	0.00	0.00	0.00	0.00	0.00
P-519	JC-32	Pump-6	4.00	0.11	0.00	0.26	0.17	0.17
P-520	2173	2176	0.00	0.00	0.00	0.00	0.00	0.00
P-522	2176	2177	0.00	0.00	0.00	0.00	0.00	0.00
P-523	2176	2178	0.00	0.00	0.00	0.00	0.00	0.00
P-524	JC-29	2180	2.00	139.74	0.00	0.82	4.00	4.00
P-525	2332	2065	0.00	0.00	0.00	0.00	0.00	0.00
P-526	2333	2186	2.00	45.74	0.00	0.82	4.00	4.00
527	2329	2184	0.00	0.00	0.00	0.00	0.00	0.00
528	RV-8	J-457	6.00	5.90	0.00	0.39	0.35	0.35
P-529	J-457	2182	6.00	0.18	0.00	0.39	0.35	0.35
P-530	2182	2183	2.00	4.77	0.00	0.82	4.00	4.00
P-531	2182	2181	4.00	0.12	0.00	0.10	0.02	0.02
P-532	2181	2188	2.00	5.15	0.00	0.82	4.00	4.00
P-533	2181	2179	2.00	0.21	0.00	0.13	0.05	0.05
P-534	2324	2193	0.00	0.00	0.00	0.00	0.00	0.00
P-535	2192	2196	4.00	155.96	0.00	1.63	14.43	14.43
P-536	JCO-2	2192	4.00	7.50	0.00	1.63	14.43	14.43
P-537	2194	JCO-4	0.00	0.00	0.00	0.00	0.00	0.00
P-538	J-192	J-557	22.37	0.49	0.00	0.25	0.06	0.06
P-539	J-241	J-561	22.37	1.42	0.00	0.25	0.06	0.06
P-540	J-561	J-562	20.37	0.28	0.00	0.23	0.05	0.05
P-541	J-562	J-563	20.37	0.16	0.00	0.23	0.05	0.05
P-542	J-563	2248	18.37	0.30	0.00	0.21	0.04	0.04
P-543	JCO-7	2198	4.00	408.36	0.00	1.63	14.43	14.43
P-544	2198	2197	2.00	63.69	0.00	0.82	4.00	4.00
P-545	2198	2200	2.00	6.30	0.00	0.82	4.00	4.00
P-546	J-219	J-313	1349.89	38.43	0.00	3.83	3.85	3.85
P-547	J-313	2204	2.00	23.68	0.00	0.82	4.00	4.00
P-548	2204	2205	2.00	2.50	0.00	0.82	4.00	4.00
P-549	2204	2207	0.00	0.00	0.00	0.00	0.00	0.00
P-550	2407	2206	0.00	0.00	0.00	0.00	0.00	0.00
P-551	JS-5	J-130	6.86	0.03	0.00	0.18	0.05	0.05
P-552	J- 39	J-655	113.15	10.78	0.00	2.89	8.23	8.23
P-553	Pump-1	J-694	1.14	0.00	0.00	0.03	0.00	0.00
P-554	2216	2213	2.00	4.12	0.00	0.82	4.00	4.00
P-555	2216	2219	0.00	0.00	0.00	0.00	0.00	0.00
P-556	2218	2216	2.00	8.97	0.00	0.82	4.00	4.00
P-557	J-187	J-249	0.00	0.00	0.00	0.00	0.00	0.00
P-558	J-149	J-227	2.00	0.01	0.00	0.05	0.00	0.00
559	J-239	J-149	2.00	0.01	0.00	0.05	0.00	0.00
560	2426	2224	0.00	0.00	0.00	0.00	0.00	0.00
P-561	J- 8	JL-16	19.00	0.13	0.00	0.49	0.30	0.30
P-562	2229	JH-10	0.00	0.00	0.00	0.00	0.00	0.00
P-563	2227	2217	2.00	197.33	0.00	0.82	4.00	4.00
P-564	2217	2228	1.16	0.20	0.00	0.47	1.45	1.45
P-565	2217	2228	0.84	0.20	0.00	0.34	0.81	0.81
P-566	2228	2231	2.00	48.74	0.00	0.82	4.00	4.00

P-646	J-364	J-345	82.01	10.42	0.00	2.09	4.53	4.53
P-647	J-367	J-368	80.01	10.60	0.00	2.04	4.33	4.33
P-648	J-368	J-708	76.01	12.51	0.00	1.94	3.94	3.94
P-649	J-708	J-707	76.01	19.89	0.00	1.94	3.94	3.94
P-650	J-378	J-380	3.01	0.05	0.00	0.08	0.01	0.01
P-651	J-380	J-385	3.01	0.09	0.00	0.08	0.01	0.01
P-652	J-407	J-408	3.01	0.00	0.00	0.01	0.00	0.00
653	J-285	J-386	0.00	0.00	0.00	0.00	0.00	0.00
654	J-394	J-302	0.00	0.00	0.00	0.00	0.00	0.00
P-655	J-509	J-489	2.00	0.00	0.00	0.01	0.00	0.00
P-656	J-377	J-398	3.01	0.03	0.00	0.08	0.01	0.01
P-657	J-398	J-395	3.01	0.02	0.00	0.08	0.01	0.01
P-658	J-400	J-377	3.01	0.02	0.00	0.08	0.01	0.01
P-659	J-401	J-400	3.01	0.04	0.00	0.08	0.01	0.01
P-660	J-385	J-407	3.01	0.00	0.00	0.01	0.00	0.00
P-661	J-408	J-401	3.01	0.01	0.00	0.08	0.01	0.01
P-662	J-344	J-509	4.00	0.00	0.00	0.03	0.00	0.00
P-663	J-364	J-531	2.00	0.00	0.00	0.02	0.00	0.00
P-664	J-710	J-364	88.01	3.71	0.00	1.00	0.72	0.72
P-665	J-525	J-512	72.99	22.13	0.00	0.83	0.51	0.51
P-666	J-413	J-417	2.00	7.77	0.00	0.82	4.00	4.00
P-667	J-417	J-410	2.00	4.35	0.00	0.82	4.00	4.00
P-668	J-746	J-413	2.00	0.00	0.00	0.02	0.00	0.00
P-669	J-656	J-416	2.00	1.20	0.00	0.82	4.00	4.00
P-670	J-121	J-418	52.99	89.53	0.00	1.35	2.02	2.02
P-671	J-418	J-512	20.63	0.53	0.00	0.23	0.05	0.05
P-672	J-395	JN-3	3.01	0.07	0.00	0.08	0.01	0.01
P-673	J-657	J-419	2.00	0.00	0.00	0.01	0.00	0.00
P-674	J-658	J-420	2.00	0.00	0.00	0.01	0.00	0.00
P-675	J-659	J-421	2.00	0.00	0.00	0.01	0.00	0.00
P-676	J-423	J-422	2.00	0.00	0.00	0.01	0.00	0.00
P-677	J-509	J-423	2.00	0.00	0.00	0.01	0.00	0.00
P-678	J-424	J-556	28.37	15.03	0.00	0.72	0.63	0.63
P-679	J-426	J-425	88.01	3.49	0.00	1.00	0.72	0.72
P-680	J-428	J-426	88.01	4.19	0.00	1.00	0.72	0.72
P-681	J-521	J-427	88.01	2.44	0.00	1.00	0.72	0.72
P-682	J-440	J-436	2.00	0.00	0.00	0.02	0.00	0.00
P-683	J-650	J-458	2.00	0.01	0.00	0.02	0.00	0.00
P-684	Pump-3	J-468	98.01	2.38	0.00	1.11	0.88	0.88
685	JS-21	J-482	1410.09	33.18	0.00	4.00	4.18	4.18
686	J- 55	T- 10	1009.44	12.67	0.00	4.12	5.47	5.47
P-687	J-456	JC-26	988.53	18.95	0.00	4.04	5.26	5.26
P-688	JC-27	RV-8	6.00	0.50	0.00	0.39	0.35	0.35
P-689	Pump-4	J-503	6.00	0.14	0.00	0.15	0.04	0.04
P-690	J-503	2159	6.00	0.42	0.00	0.15	0.04	0.04
P-691	Pump-5	2237	4.00	3.62	0.00	0.26	0.17	0.17
P-697	J-518	J-413	0.00	0.00	0.00	0.00	0.00	0.00
P-699	J-425	J-520	88.01	5.29	0.00	1.00	0.72	0.72
P-700	J-526	J-521	88.01	5.88	0.00	1.00	0.72	0.72
P-701	J-520	J-522	88.01	1.09	0.00	1.00	0.72	0.72
P-702	J-528	J-372	94.01	7.14	0.00	1.07	0.81	0.81
P-703	J-378	J-525	72.99	11.67	0.00	0.83	0.51	0.51
P-704	J-468	J-528	96.01	2.48	0.00	1.09	0.84	0.84
P-705	J-529	J-514	2.00	0.00	0.00	0.02	0.00	0.00
P-706	J-530	J-529	2.00	0.00	0.00	0.02	0.00	0.00
P-707	J-531	J-530	2.00	0.01	0.00	0.02	0.00	0.00
P-733	J-458	J-440	2.00	0.01	0.00	0.02	0.00	0.00
P-734	RV-7	J-650	2.00	0.01	0.00	0.02	0.00	0.00
P-735	J-691	J-652	2.00	0.00	0.00	0.02	0.00	0.00
P-736	J-436	J-653	2.00	0.00	0.00	0.02	0.00	0.00
P-737	J-681	J-654	2.00	0.00	0.00	0.02	0.00	0.00
P-738	J-666	RV-6	2.00	0.00	0.00	0.02	0.00	0.00
P-739	J-419	J-656	2.00	0.00	0.00	0.01	0.00	0.00
P-740	J-420	J-657	2.00	0.00	0.00	0.01	0.00	0.00
P-741	J-421	J-658	2.00	0.00	0.00	0.01	0.00	0.00
P-742	J-422	J-659	2.00	0.00	0.00	0.01	0.00	0.00
P-744	J-416	J-666	2.00	0.00	0.00	0.02	0.00	0.00
P-745	RV-6	J-678	2.00	0.00	0.00	0.02	0.00	0.00
P-746	J-678	J-681	2.00	0.00	0.00	0.02	0.00	0.00
P-747	J-654	J-683	2.00	0.00	0.00	0.02	0.00	0.00
P-748	J-683	J-691	2.00	0.00	0.00	0.02	0.00	0.00
750	J-427	J-428	88.01	3.49	0.00	1.00	0.72	0.72
-751	J-655	J-692	113.15	12.69	0.00	2.89	8.23	8.23
P-752	J-692	T- 16	113.15	35.78	0.00	2.89	8.23	8.23
P-753	T- 16	Pump-1	1.14	0.00	0.00	0.03	0.00	0.00
P-754	J-694	J-695	1.14	0.02	0.00	0.03	0.00	0.00
P-755	J-697	J-695	0.86	0.00	0.00	0.02	0.00	0.00
P-756	J-698	J-696	0.86	0.01	0.00	0.02	0.00	0.00
P-757	J-696	J-697	0.86	0.00	0.00	0.02	0.00	0.00

2088	2.00	2630.56	2294.84	335.72	145.48
2090	0.00	2674.91	2302.00	372.91	161.59
2091	0.00	2611.03	2343.96	267.07	115.73
2093	0.00	2887.21	2493.47	393.75	170.62
2094	0.00	2675.44	2343.89	331.55	143.67
2096	0.00	2674.91	2227.46	447.45	193.90
2098	0.00	2675.44	2368.20	307.24	133.14
2099	0.00	2675.25	2304.39	370.86	160.71
2102	0.00	2675.90	2416.07	259.83	112.59
2104	0.00	2677.19	2363.68	313.52	135.86
2105	0.00	2677.19	2258.36	418.83	181.49
2106	0.00	2677.19	2205.38	471.82	204.45
2107	0.00	2677.19	2282.38	394.82	171.09
2108	0.00	2679.85	2359.08	320.77	139.00
2109	0.00	2770.75	2358.13	412.62	178.80
2110	0.00	2679.85	2320.30	359.54	155.80
2111	0.00	2680.73	2442.25	238.47	103.34
2112	2.00	2593.07	2397.53	195.53	84.73
2113	2.00	2554.26	2332.41	221.85	96.13
2114	2.00	2789.50	2472.67	316.84	137.30
2115	2.00	2741.93	2480.44	261.49	113.31
2116	2.00	2694.07	2432.97	261.10	113.14
2117	2.00	2755.62	2451.44	304.18	131.81
2119	0.00	2710.96	2268.47	442.49	191.75
2121	0.00	2485.02	2511.81	-26.79	-11.61
2125	2.00	2610.67	2329.56	281.12	121.82
2126	0.00	2820.51	2588.22	232.29	100.66
2127	0.00	2820.51	2603.01	217.50	94.25
2129	0.00	2845.35	2467.68	377.67	163.66
2130	0.00	2820.51	2546.55	273.96	118.72
2132	0.00	2933.10	2416.66	516.44	223.79
2133	0.00	2845.35	2438.02	407.33	176.51
2134	0.00	2864.48	2438.22	426.26	184.71
2137	0.00	2933.10	2432.67	500.43	216.85
2138	0.00	2933.10	2443.53	489.57	212.15
2139	0.00	2933.10	2421.98	511.13	221.49
2140	0.00	2933.10	2480.74	452.37	196.03
2141	0.00	2933.10	2426.60	506.50	219.48
2142	0.00	2933.10	2426.37	506.73	219.58
2143	0.00	2933.10	2418.30	514.80	223.08
2145	2.00	2693.35	2829.92	-136.57	-59.18
2146	0.00	2696.86	2558.26	138.60	60.06
2147	2.00	2550.76	2288.02	262.74	113.85
2150	2.00	2784.54	2749.67	34.87	15.11
2152	0.00	2816.78	2714.56	102.22	44.30
2154	2.00	2781.38	2722.07	59.31	25.70
2155	0.00	2867.31	2728.44	138.87	60.18
2158	2.00	3363.12	3207.70	155.42	67.35
2159	0.00	3231.09	2843.27	387.82	168.05
2161	2.00	3196.39	2670.30	526.09	227.97
2163	2.00	2772.35	2689.89	82.46	35.73
2173	0.00	2865.32	2782.67	82.65	35.81
2176	0.00	2865.32	2760.85	104.47	45.27
2177	0.00	2865.32	2816.27	49.05	21.26
2178	0.00	2865.32	2750.85	114.47	49.60
2179	2.00	2639.50	2337.63	301.88	130.81
2180	2.00	2727.12	2427.85	299.28	129.69
2181	0.00	2639.72	2293.53	346.19	150.01
2182	0.00	2639.84	2350.09	289.75	125.56
2183	2.00	2635.07	2387.23	247.84	107.40
2184	0.00	2887.43	2611.05	276.38	119.76
2185	2.00	2864.06	2735.00	129.06	55.93
2186	2.00	2741.57	2771.35	-29.78	-12.90
2187	2.00	2470.93	2274.96	195.97	84.92
2188	2.00	2634.57	2400.13	234.45	101.59
2190	0.00	2665.93	2574.93	91.00	39.44
2191	0.00	2497.72	2419.16	78.57	34.05
2192	0.00	2968.17	2758.79	209.38	90.73
2193	0.00	3042.29	2558.95	483.33	209.44
2194	0.00	2977.99	2864.13	113.86	49.34
2195	2.00	2649.76	2423.68	226.07	97.96
2196	4.00	2812.21	2676.04	136.17	59.01
2197	2.00	2515.60	2861.15	-345.55	-149.74
2198	0.00	2579.29	2872.93	-293.63	-127.24
2199	0.00	3428.41	3237.20	191.22	82.86
2200	2.00	2572.99	2958.36	-385.36	-166.99
2201	0.00	3428.25	3122.34	305.91	132.56
2202	2.00	2481.32	2549.34	-68.02	-29.48
2204	0.00	3270.97	2872.57	398.41	172.64

J- 22		0.00	2718.82	2319.98	398.84	172.83
J- 23		0.00	2932.78	2425.49	507.28	219.82
J- 36		0.00	3079.73	2846.00	233.73	101.28
J- 37		0.00	3086.65	2800.00	286.65	124.21
J- 39	Steve Forks	0.00	3142.24	2860.00	282.24	122.31
J- 40		0.00	3142.62	2860.00	282.62	122.47
J- 41		0.00	2966.84	2773.00	193.84	84.00
J- 42		0.00	2674.23	2605.86	68.36	29.62
J- 43		0.00	2718.63	2400.04	318.59	138.06
J- 44		0.00	2990.72	2840.00	150.72	65.31
J- 45		0.00	2908.44	2484.57	423.87	183.68
J- 47		0.00	2699.52	2540.00	159.52	69.12
J- 55		0.00	2599.97	2460.56	139.42	60.41
J- 58		0.00	2591.66	2174.00	417.66	180.99
J- 61		0.00	2666.80	2446.26	220.54	95.57
J- 71		0.00	2666.76	2442.22	224.54	97.30
J- 72		0.00	2722.57	2581.00	141.57	61.35
J- 73		0.00	3135.61	2926.00	209.61	90.83
J- 74		0.00	2732.20	2611.08	121.13	52.49
J- 75		0.00	2732.92	2611.00	121.92	52.83
J- 76		0.00	2740.12	2596.87	143.24	62.07
J- 77		0.00	2741.66	2596.00	145.66	63.12
J- 78		0.00	2666.91	2372.56	294.35	127.55
J- 79		0.00	2666.90	2372.00	294.90	127.79
J- 80		0.00	3339.80	3020.00	319.80	138.58
J- 81		0.00	2467.65	2377.00	90.65	39.28
J- 83	Maniage Spri	0.00	2864.70	2686.00	178.70	77.44
J- 84		0.00	2668.50	2610.55	57.95	25.11
J- 85		0.00	2830.57	2690.00	140.57	60.91
J- 86		0.00	2830.21	2620.00	210.21	91.09
J- 87		0.00	2825.00	2548.00	277.00	120.03
J- 88		0.00	2824.86	2548.63	276.23	119.70
J- 89		0.00	2847.63	2631.00	216.63	93.87
J- 91		0.00	2734.17	2613.14	121.03	52.44
J- 98		0.00	2666.61	2493.62	172.99	74.96
J-101		0.00	2612.73	2421.00	191.73	83.08
J-103		0.00	2887.21	2450.39	436.82	189.29
J-104		0.00	3345.39	2800.00	545.39	236.33
J-108		0.00	2830.19	2682.97	147.22	63.80
J-109		0.00	2717.94	2322.44	395.50	171.38
J-110		0.00	3406.30	3185.00	221.30	95.90
J-114		0.00	2901.81	2318.00	583.81	252.98
J-115		0.00	2901.16	2600.00	301.16	130.50
J-116		0.00	2555.61	2345.00	210.61	91.26
J-117		0.00	3387.90	2978.00	409.90	177.62
J-118		0.00	3391.61	3000.00	391.61	169.70
J-119		0.00	2955.28	2807.19	148.09	64.17
J-120		0.00	2627.57	2415.00	212.57	92.11
J-121		2.00	2665.93	2574.93	91.01	39.44
J-122		0.00	2705.11	2655.88	49.23	21.33
J-123		0.00	2937.39	2422.38	515.01	223.17
J-124		0.00	2938.07	2422.00	516.07	223.63
J-125		0.00	2930.56	2422.00	508.56	220.38
J-126		0.00	2797.85	2466.07	331.78	143.77
J-127		2.00	2865.32	2824.53	40.79	17.67
J-128	Wolf Point R	0.00	2351.80	2204.42	147.38	63.86
J-129		0.00	3339.80	3020.00	319.80	138.58
J-130		6.00	3428.73	3000.00	428.73	185.78
J-131		0.00	2666.60	2500.00	166.60	72.19
J-133		0.00	2666.60	2500.00	166.60	72.19
J-134		0.00	3344.07	2957.00	387.07	167.73
J-135		0.00	3343.16	2985.00	358.16	155.20
J-137		0.00	3342.41	2990.00	352.41	152.71
J-138		0.00	3340.89	3036.00	304.89	132.12
J-143		0.00	3341.46	3063.00	278.46	120.66
J-145		0.00	3339.48	3020.00	319.48	138.44
J-147		0.00	3338.71	3018.00	320.71	138.98
J-148		0.00	2820.51	2478.83	341.68	148.06
J-149		0.00	2720.27	2340.00	380.27	164.78
J-151		0.00	3409.71	3358.00	51.71	22.41
J-153		0.00	3382.83	3222.00	160.83	69.69
J-155		0.00	3349.96	3138.00	211.96	91.85
J-157		0.00	3323.68	3186.00	137.68	59.66
J-159		0.00	3393.26	3230.00	163.26	70.75
J-161		0.00	3330.19	3160.00	170.19	73.75
J-163		0.00	3328.55	3176.00	152.55	66.11
J-164		0.00	2770.75	2461.34	309.41	134.08
J-165		0.00	3328.26	3200.00	128.26	55.58
J-167		0.00	3479.02	3300.00	179.02	77.58

J-344		0.00	2720.31	2540.00	180.31	78.14
J-345		2.00	2710.07	2361.00	349.07	151.26
J-361		0.00	2681.21	2418.00	263.21	114.06
J-364		0.00	2720.49	2361.00	359.49	155.78
J-367		0.00	2673.20	2500.00	173.20	75.05
J-368		4.00	2662.60	2538.00	124.60	53.99
J-372		2.00	2763.21	2820.00	-56.79	-24.61
J-377		0.00	2609.46	2500.00	109.46	47.43
J-378		0.00	2609.67	2383.00	226.67	98.23
J-380		0.00	2609.62	2312.00	297.62	128.97
J-385		0.00	2609.53	2368.00	241.53	104.66
J-386		0.00	2720.24	2470.00	250.24	108.44
J-394		0.00	2720.24	2360.00	360.24	156.11
J-395		0.00	2609.41	2465.00	144.41	62.58
J-398		0.00	2609.43	2509.00	100.43	43.52
J-400		0.00	2609.48	2446.00	163.48	70.84
J-401		0.00	2609.52	2425.00	184.52	79.96
J-407		0.00	2609.53	2368.00	241.53	104.66
J-408		0.00	2609.53	2368.00	241.53	104.66
J-410		2.00	2460.00	2200.00	260.00	112.67
J-413		0.00	2472.11	2140.00	332.11	143.92
J-416		0.00	2719.10	2548.00	171.10	74.14
J-417		0.00	2464.35	2200.00	264.35	114.55
J-418		0.00	2576.41	2560.00	16.41	7.11
J-419		0.00	2720.30	2568.00	152.30	66.00
J-420		0.00	2720.30	2500.00	220.30	95.46
J-421		0.00	2720.30	2564.00	156.30	67.73
J-422		0.00	2720.31	2441.00	279.31	121.03
J-423		0.00	2720.31	2515.00	205.31	88.97
J-424		0.00	2409.81	2072.40	337.41	146.21
J-425		0.00	2734.95	2429.00	305.95	132.58
J-426		0.00	2738.43	2472.00	266.43	115.45
J-427		0.00	2746.11	2417.00	329.11	142.62
J-428		0.00	2742.62	2534.00	208.62	90.40
J-436		0.00	2472.13	2134.00	338.13	146.52
J-440		0.00	2472.13	2180.00	292.13	126.59
J-456		0.00	3042.36	2502.02	540.34	234.15
J-457		0.00	2640.02	2361.64	278.38	120.63
J-458		0.00	2472.14	2100.00	372.14	161.26
-468		2.00	2772.84	2500.00	272.84	118.23
J-482		0.00	2955.41	2838.87	116.54	50.50
J-487		0.00	2697.51	2640.00	57.51	24.92
J-489	Lower Summit	0.00	2720.31	2510.00	210.31	91.13
J-490		0.00	2924.80	2437.00	487.80	211.38
J-491		0.00	2755.89	2700.00	55.89	24.22
J-503		0.00	3231.51	2737.00	494.51	214.29
J-509		0.00	2720.31	2510.00	210.31	91.13
J-512		0.00	2575.88	2560.00	15.88	6.88
J-514		2.00	2720.47	2300.00	420.47	182.20
J-518		0.00	2472.11	2020.00	452.11	195.92
J-520		0.00	2729.66	2420.00	309.66	134.19
J-521		0.00	2748.55	2755.00	-6.45	-2.79
J-522		0.00	2728.57	2410.00	318.57	138.05
J-525		0.00	2598.01	2590.00	8.01	3.47
J-526		2.00	2754.43	2639.00	115.43	50.02
J-528		2.00	2770.35	2662.00	108.35	46.95
J-529		0.00	2720.47	2300.00	420.47	182.20
J-530		0.00	2720.47	2350.00	370.47	160.54
J-531		0.00	2720.48	2350.00	370.48	160.54
J-556	Four Corners	0.00	2394.78	2102.00	292.78	126.87
J-557		0.00	2392.25	2058.00	334.25	144.84
J-561		2.00	2412.82	2030.00	382.82	165.89
J-562		0.00	2412.54	1989.00	423.54	183.54
J-563		2.00	2412.39	1984.00	428.39	185.63
J-568		2.00	2591.66	2174.00	417.66	180.99
J-650		0.00	2472.15	2070.00	402.15	174.26
J-652		0.00	2522.22	2231.00	291.22	126.19
J-653		0.00	2472.12	2260.00	212.12	91.92
J-654		0.00	2522.23	2304.00	218.23	94.56
J-655		0.00	3131.46	2860.00	271.46	117.63
J-656		0.00	2720.30	2548.00	172.30	74.66
-657		0.00	2720.30	2550.00	170.30	73.80
J-658		0.00	2720.30	2656.00	64.30	27.86
J-659		0.00	2720.31	2489.00	231.31	100.23
J-666		0.00	2719.10	2595.00	124.10	53.78
J-678		0.00	2522.23	2393.00	129.23	56.00
J-681		0.00	2522.23	2316.00	206.23	89.37
J-683		0.00	2522.22	2183.00	339.22	147.00
J-691		0.00	2522.22	2154.00	368.22	159.56

JC-47		0.00	2790.57	2675.00	115.57	50.08
JC-48		0.00	2759.36	2628.00	131.36	56.92
JC-49		2.00	2745.70	2570.00	175.70	76.14
JC-5		4.00	3195.62	2664.67	530.95	230.08
JC-50		4.00	2738.98	2571.75	167.23	72.47
JC-51		4.00	2671.81	2542.98	128.83	55.82
JC-52		5.00	2957.61	2450.98	506.63	219.54
JC-53		4.00	2638.95	2534.62	104.33	45.21
JC-54		2.00	2624.02	2536.82	87.20	37.79
JC-54A		300.00	2612.73	2430.15	182.58	79.12
JC-55		2.00	2590.37	2499.06	91.31	39.57
JC-56		2.00	2544.41	2476.79	67.61	29.30
JC-58		2.00	2974.42	2452.65	521.76	226.10
JC-59		4.00	2967.87	2443.90	523.97	227.06
JC-6		2.00	3173.49	2585.59	587.90	254.76
JC-7		2.00	3145.01	2671.17	473.84	205.33
JC-7A		2.00	3107.14	2661.16	445.98	193.26
JC-8		2.00	3098.04	2683.40	414.64	179.68
JC-8A		2.00	3070.56	2564.93	505.63	219.11
JC-9		2.00	3070.56	2529.80	540.76	234.33
JCO-1		5.00	2975.61	2724.50	251.11	108.81
JCO-10		2.00	3020.45	2717.32	303.14	131.36
JCO-11		5.00	3047.45	2592.77	454.68	197.03
JCO-12		5.00	3047.87	2601.04	446.83	193.63
JCO-13		2.00	3051.47	2616.00	435.47	188.71
JCO-14		2.00	3054.98	2636.00	418.98	181.56
JCO-15		2.00	3058.58	2658.47	400.11	173.38
JCO-2		2.00	2975.67	2741.00	234.67	101.69
JCO-3		4.00	2976.28	2761.73	214.55	92.97
JCO-4		4.00	2977.99	2776.00	201.99	87.53
JCO-5		4.00	2982.41	2892.00	90.41	39.18
JCO-6		2.00	2985.27	2957.83	27.45	11.89
JCO-7		4.00	2987.65	2986.31	1.34	0.58
JCO-8		4.00	2993.93	2999.69	-5.76	-2.50
JCO-9		2.00	3014.40	2752.84	261.57	113.35
JD-1		0.00	2830.21	2685.47	144.74	62.72
JD-1Ann		0.00	2830.57	2623.74	206.83	89.63
JD-2	Well Capacit	250.00	2829.59	2606.03	223.56	96.88
JD-3		0.00	2829.59	2580.00	249.59	108.16
JD-4		0.00	2829.59	2669.89	159.70	69.20
[illegible]Bstr		0.00	3072.91	2862.00	210.91	91.40
JdnCirBst1		0.00	3225.48	2660.00	565.48	245.04
JdnCirBst2		0.00	3047.50	2500.00	547.50	237.25
JdnCirBst3		0.00	3184.96	2600.00	584.96	253.48
JdnCirBst4		0.00	3013.81	2451.90	561.91	243.49
JG-1		6.00	3015.26	2881.58	133.68	57.93
JG-10		2.00	3386.91	2950.00	436.91	189.33
JG-11		2.00	3389.12	3200.00	189.12	81.95
JG-12		2.00	3393.03	3065.00	328.03	142.15
JG-13		4.00	3394.44	2980.00	414.44	179.59
JG-14	Brusett Chur	2.00	3396.94	3012.91	384.03	166.42
JG-2		2.00	3369.79	2997.85	371.93	161.17
JG-3		10.00	3370.80	3194.46	176.34	76.41
JG-4		2.00	3375.29	3150.00	225.29	97.62
JG-5		0.00	3376.18	3100.00	276.18	119.68
JG-7		2.00	3383.74	3099.01	284.73	123.38
JG-8		0.00	3386.04	2980.00	406.04	175.95
JH-1		2.00	2478.49	2281.99	196.49	85.15
JH-10		4.00	3080.25	2826.74	253.51	109.86
JH-11		2.00	3081.22	2797.68	283.55	122.87
JH-12		2.00	3081.52	2810.40	271.12	117.48
JH-13		2.00	3082.19	2774.00	308.19	133.55
JH-14		4.00	3082.83	2750.00	332.83	144.23
JH-149		2.00	2830.11	2658.00	172.11	74.58
JH-15		2.00	3083.21	2755.00	328.21	142.22
JH-16		2.00	3084.44	2833.13	251.31	108.90
JH-17		2.00	3086.31	2840.81	245.51	106.39
JH-18		2.00	3087.64	2774.00	313.64	135.91
JH-19		2.00	2830.14	2647.00	183.14	79.36
JH-2		2.00	2478.54	2268.94	209.60	90.83
JH-3		2.00	2478.98	2250.00	228.98	99.23
JH-8		6.00	3079.84	2938.06	141.78	61.44
JH-9		2.00	3080.11	2875.51	204.60	88.66
JL-1		2.00	2631.45	2418.80	212.64	92.15
JL-10		4.00	2493.10	2412.67	80.43	34.85
JL-11		4.00	2489.19	2393.00	96.19	41.68
JL-12		2.00	2484.78	2407.78	77.00	33.37
JL-13		4.00	2476.77	2392.40	84.37	36.56
JL-14		2.00	2472.32	2458.56	13.76	5.96

JS-21		4.00	2988.59	2813.00	175.59	76.09
JS-22		4 00	2916 83	2750.00	166 83	72.29
JS-23		2 00	2903.65	2740 00	163 65	70 91
JS-24		4.00	2852.87	2670.00	182.87	79 24
JS-3		2 00	3428 28	3140.00	288 28	124.92
JS-4		4 00	3428 41	3044 00	384 41	166 58
JS-5		6.00	3428.76	3000 00	428.76	185 79
JS-6		6 00	3432 09	3038.00	394 09	170.77
JS-7		2.00	3434 27	2850.00	584 27	253.18
JS-8		4.00	3442.50	2975.00	467.50	202 58
JS-9		2 00	3448.92	3048.23	400.69	173 63
JW-10		2 00	2865 23	2593.89	271 34	117.58
JW-11		2.00	2850.47	2472 60	377 88	163.75
JW-12A		2.00	2826.30	2548.00	278 30	120 60
JW-13		4 00	2801 83	2498.11	303.72	131 61
JW-14		2.00	2782 91	2496 41	286 50	124 15
JW-15		2 00	2747.71	2394.01	353 70	153.27
JW-16		2 00	2723 52	2518.12	205 40	89 01
JW-17		2.00	2721 39	2516.51	204.88	88 78
JW-18		2 00	2680.61	2360 22	320 38	138.83
JW-19		2 00	2674 93	2380.00	294 93	127.80
JW-2		5.00	2933 10	2422.38	510.73	221 31
JW-20		2.00	2636.80	2366 59	270.21	117 09
JW-21		5 00	2618.21	2445.93	172 28	74 65
JW-22		2.00	2831 16	2541.93	289 23	125.33
JW-23		5.00	2814 78	2443.63	371 15	160.83
JW-24		2 00	2809.79	2407 00	402.79	174 54
JW-25		5 00	2804.80	2414 05	390.76	169 33
JW-27		2.00	2790 60	2405.78	384 82	166.75
JW-28		2 00	2775.81	2356 29	419 52	181.79
JW-29		2.00	2774.96	2369 34	405.62	175.77
JW-3		2.00	2927 02	2396.14	530 88	230 05
JW-31		4 00	2725.87	2395 45	330 42	143.18
JW-32		2.00	2715.70	2416 24	299 45	129.76
JW-33		2.00	2712.42	2406.47	305.95	132 58
JW-34		4.00	2701.28	2477.25	224.03	97 08
JW-35		5 00	2682.50	2363 93	318 57	138.05
JW-36		2.00	2633.67	2298 98	334.68	145.03
JW-37		4.00	2618 60	2276.09	342.51	148.42
W-38		2 00	2615 01	2231 22	383 79	166 31
JW-39		2.00	2610.19	2302 13	308.06	133 49
JW-40		2.00	2604 25	2256 97	347.28	150.49
JW-42		6 00	2346.43	2139.84	206 59	89.52
JW-43		5.00	2342.59	2054.53	288 07	124 83
JW-44		0.00	2662 54	2566 53	96 00	41 60
JW-6		2 00	2909 62	2421.59	488.03	211.48
JW-6A		4 00	2904 71	2477.00	427.71	185.34
JW-7		0.00	2901.74	2516 94	384.80	166 75
JW-8		2.00	2894.63	2397 88	496 75	215 26
JW-9		2 00	2875 72	2477 94	397.78	172 37
JW-9A		2 00	2872 81	2424.00	448.81	194 49
JWP-1	Wolf Point D	260.00	2296 58	1997.00	299.58	129.82
JWP-2		2.00	2303.58	1985 00	318.58	138.05
JWP-3		2.00	2307.19	1980 00	327 19	141.78
JWP-4		2 00	2314 55	1984.00	330.55	143 24
JWP-5	Air Port	2 00	2320.37	1985.00	335.37	145 33
JWP-6		2.00	2333.95	1980 00	353.95	153.38
JWP-7	L&C Campgrou	4 00	2337 11	1987 00	350.11	151.71
Pump-1		0 00	3083 00	3000.00	83 00	35 97
Pump-2		0.00	2794.63	2685.52	109.10	47 28
Pump-3		0.00	2573.38	2500 00	73.38	31.80
Pump-4		0 00	3231.65	2667 00	564 65	244.68
Pump-5		0.00	3375 70	2877.00	498 70	216 10
Pump-6		0.00	2884.37	2451.00	433.37	187 80
Pump-DC1		0 00	3413.45	3240 00	173.45	75 16
Pump-DC2		0 00	3417 13	3209 00	208 13	90.19
Pump-DC3		0.00	3523.19	3200.00	323.19	140 05
R- 1		----	2250.00	2240 00	10.00	4 33
RicheyBstr		0 00	3141 15	2686 68	454 47	196.94
RV-1		0.00	3078 21	2750.00	328 21	142.22
RV-2		----	2613.88	2429.27	184.62	80 00
RV-3		0 00	2594.74	2239 00	355.74	154 15
RV-4		0.00	3368 97	2900 00	468 97	203.22
RV-5		----	2668.15	2322.00	346 15	150.00
RV-6		----	2522.23	2453 00	69.23	30 00
RV-7		----	2472 15	2126.00	346.15	150.00
RV-8		----	2645.92	2415.15	230 77	100.00
RV-HC2		----	2479.38	2364.00	115.38	50.00
SndSprBstr		0.00	2955 68	2864 00	91 68	39 73

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	50.00	ACTIVATED	142.22	50.00	6.00
RV-2	PRV-1	80.00	ACTIVATED	218.12	80.00	300.00
RV-3	PRV-1	50.00	ACTIVATED	154.15	50.00	270.63
RV-4	PRV-1	50.00	ACTIVATED	203.22	50.00	12.00
RV-5	PRV-1	150.00	ACTIVATED	171.57	150.00	34.91
RV-6	PRV-1	30.00	ACTIVATED	115.31	30.00	2.00
RV-7	PRV-1	150.00	ACTIVATED	171.69	150.00	2.00
RV-8	PRV-1	100.00	ACTIVATED	254.47	100.00	6.00
RV-HC2	PRV-1	50.00	ACTIVATED	216.79	50.00	6.00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

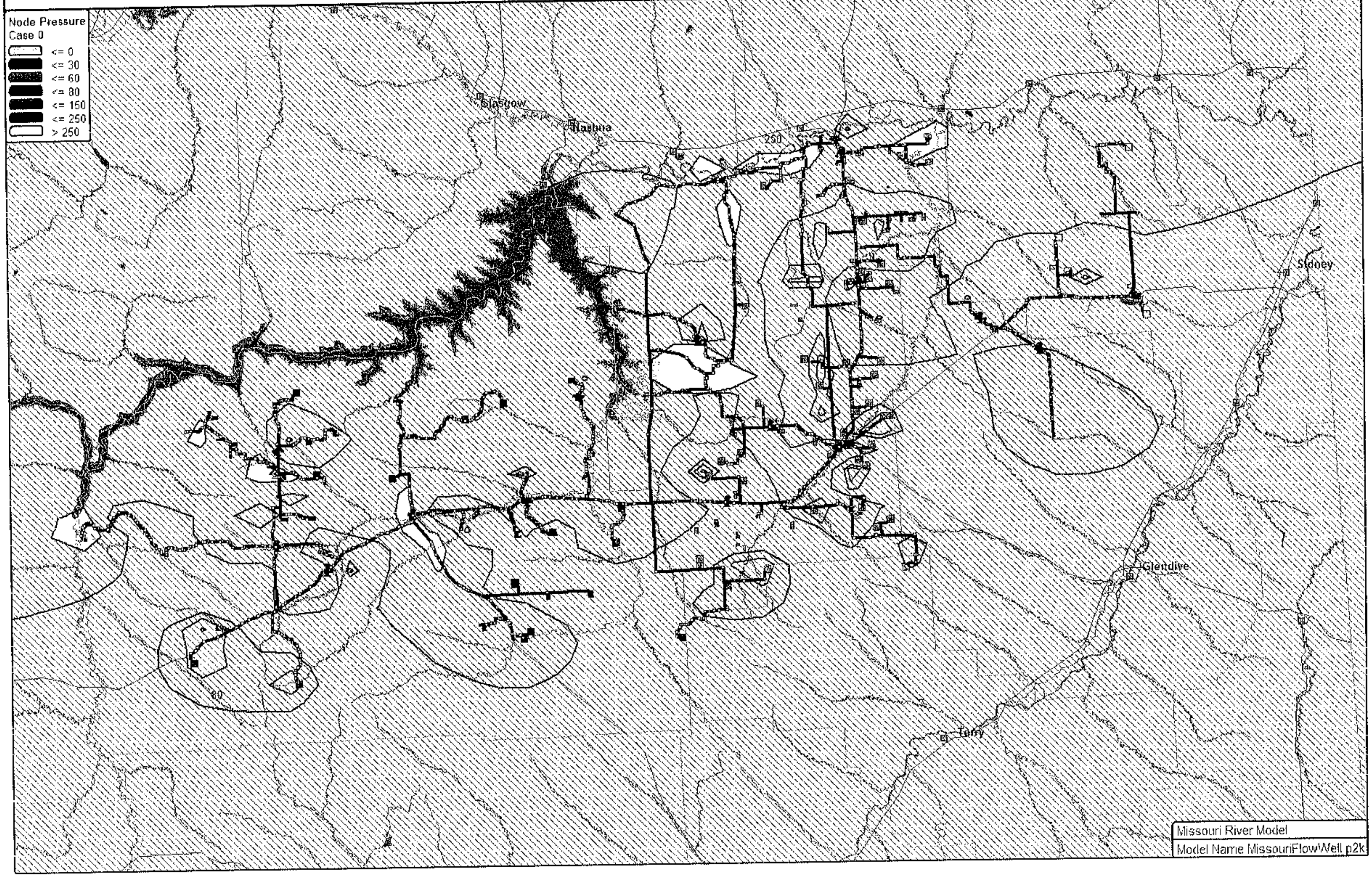
NODE NAME	FLOWRATE (gpm)	NODE TITLE
R- 1	302.41	
T- 1	-18.45	p-375
T- 2	810.39	p-391
T- 3	6.16	P-202
T- 4	846.65	
T- 5	-547.11	
T- 6	225.05	p-306
T- 7	35.53	p-298
T- 8	-37.76	p-319
T- 9	32.57	p-281
T- 10	-20.91	p-63
T- 11	34.84	p-426
T- 12	-12.19	p-84
T- 13	4.39	p-638
T- 14	-5.66	p-166
T- 15	86.09	p-130
T- 16	-112.00	

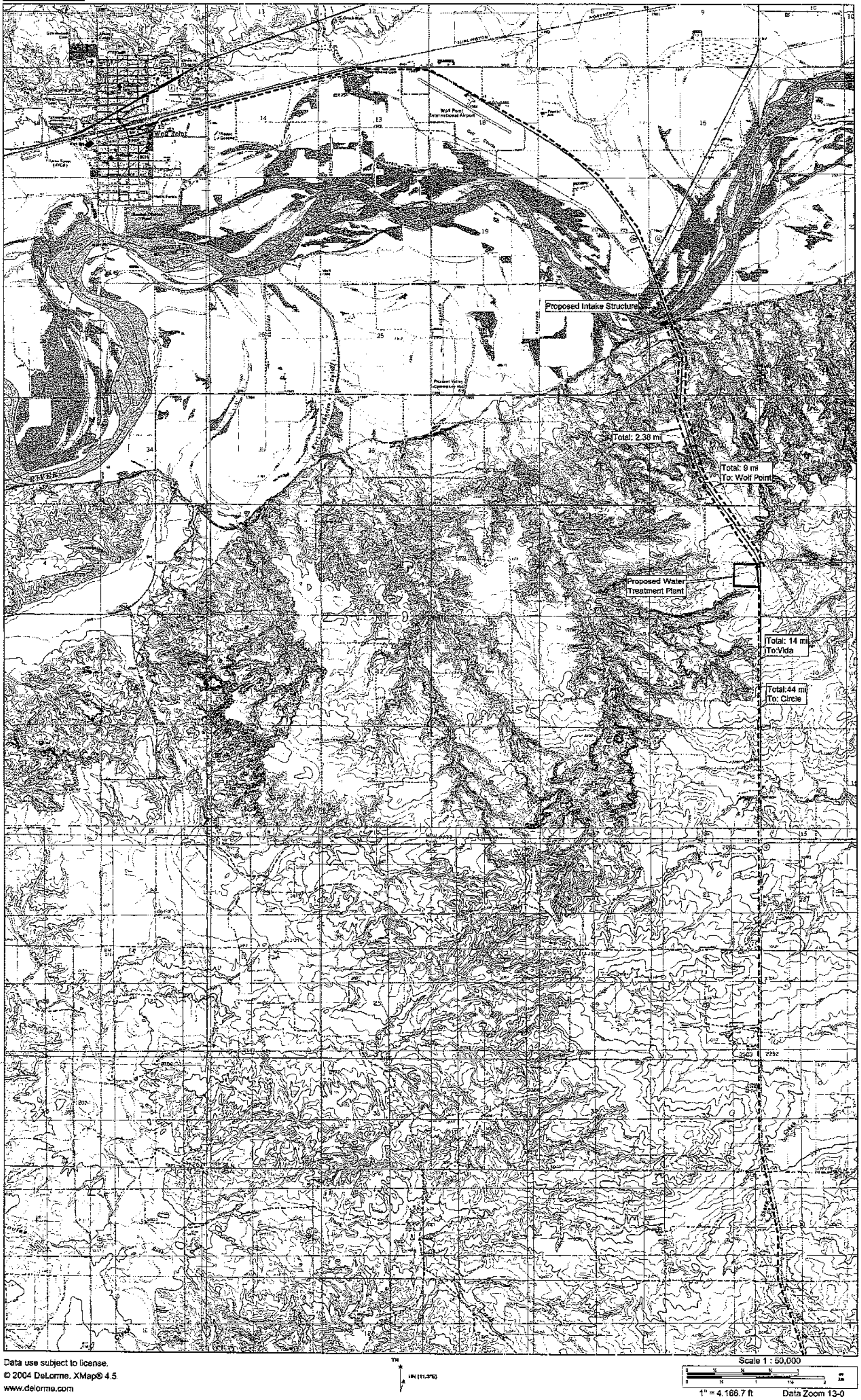
NET SYSTEM INFLOW = 2384.08
NET SYSTEM OUTFLOW = -754.08
NET SYSTEM DEMAND = 1630.00

***** HYDRAULIC ANALYSIS COMPLETED *****

Missouri River Model

DRY REDWATER - MISSOURI RIVER FLOWING WELL




Proposed Intake Structure
Total: 2.38 mi
Total: 9 mi
To: Wolf Point
Proposed Water
Treatment Plant
Total: 14 mi
To:Vida
Total:44 mi
To: Circle
Wolf Point
Scale 1 : 50,000
1" = 4,166.7 ft
Data Zoom 13-0

DRY REDWATER - MISSOURI RIVER FLOWING WELL - PRELIMINARY COST ESTIMATE

Buy Water from The Fort Peck Tribes

Description	Quantity	Unit	Unit Price	Total Price
3" PVC Class 100	0	LF	$ 7.53	$ -
4" PVC Class 100	65,812	LF	$ 7.74	$ 509,400.00
5" PVC Class 100	0	LF	$ 8.33	$ -
6" PVC Class 100	5,808	LF	$ 9.03	$ 52,400.00
8" PVC Class 100	0	LF	$ 10.50	$ -
10" PVC Class 100	0	LF	$ 12.33	$ -
12" PVC Class 100	0	LF	$ 14.73	$ -
2" PVC Class 160	0	LF	$ 7.44	$ -
2.5" PVC Class 160	206,001	LF	$ 7.51	$ 1,547,100.00
3" PVC Class 160	270,109	LF	$ 7.65	$ 2,066,300.00
4" PVC Class 160	639,207	LF	$ 8.04	$ 5,139,200.00
5" PVC Class 160	65,171	LF	$ 8.67	$ 565,000.00
6" PVC Class 160	193,366	LF	$ 9.24	$ 1,786,700.00
8" PVC Class 160	110,520	LF	$ 10.79	$ 1,192,500.00
10" PVC Class 160	139,365	LF	$ 12.88	$ 1,795,000.00
12" PVC Class 160	0	LF	$ 15.09	$ -
2" PVC Class 200		LF	$ 7.41	$ -
2.5" PVC Class 200		LF	$ 7.60	$ -
3" PVC Class 200	3,058	LF	$ 7.78	$ 23,800.00
4" PVC Class 200	196,163	LF	$ 8.00	$ 1,569,300.00
5" PVC Class 200	8,162	LF	$ 9.05	$ 73,900.00
6" PVC Class 200	212,389	LF	$ 9.72	$ 2,064,400.00
8" PVC Class 200	925,735	LF	$ 11.60	$ 10,738,500.00
10" PVC Class 200	108,076	LF	$ 18.37	$ 1,985,400.00
12" PVC Class 200	0	LF	$ 20.12	$ -
1"PVC Class 250	571,380	LF	$ 4.00	$ 2,285,500.00
1.5"PVC Class 250	881,362	LF	$ 7.40	$ 6,522,100.00
2"PVC Class 250	18,942	LF	$ 7.45	$ 141,100.00
2.5"PVC Class 250	137,823	LF	$ 7.65	$ 1,054,300.00
3" PVC Class 250	23,950	LF	$ 7.98	$ 191,100.00
4" PVC Class 250	44,396	LF	$ 8.62	$ 382,700.00
5" PVC Class 250	32,869	LF	$ 9.45	$ 310,600.00
6" PVC Class 250	14,790	LF	$ 10.51	$ 155,400.00
8" PVC Class 250	22,653	LF	$ 12.97	$ 293,800.00
10" PVC Class 250	120,392	LF	$ 16.31	$ 1,963,600.00
12" PVC Class 250	0	LF	$ 23.03	$ -
Storage Tanks In Line (20,000 Gal ave)	11	EA	$ 45,000.00	$ 495,000.00
WTP Storage Tank (1,000,000 Gal)	1	EA	$ 1,000,000.00	$ 1,000,000.00
Pump Stations (21)	21	EA	$ 35,000.00	$ 735,000.00
Regulator Stations	1	EA	$ 6,000.00	$ 6,000.00
Mobilization	1	L.S.	$ 150,000.00	$ 150,000.00
		Total Estimated Bid		$ 46,795,100.00
		Contingency		$ 4,679,500.00
		Total Estimated Construction		$ 51,474,600.00
		Engineering Design		$ 4,211,600.00
		Engineering Con. Admin		$ 3,275,700.00
		Legal/administartion		$ 514,700.00
		Estimated Project		$ 59,476,600.00

Intake Screens	2	Each	$ 7,500.00	$ 15,000.00
Intake Piping / Valves	1	L.S.	$ 50,000.00	$ 50,000.00
Coffer Dam	1	L.S.	$ 7,000.00	$ 7,000.00
Erosion Pads	2	Each	$ 5,000.00	$ 10,000.00
Riprap	330	C.Y.	$ 30.00	$ 9,900.00
Intake Sump	1	L.S.	$ 30,000.00	$ 30,000.00
Intake Building	1	L.S.	$ 22,000.00	$ 22,000.00
Sedimentations Pond Liner	196,000	S.F.	$ 0.85	$ 166,600.00
12" Outlet Piping	600	L.F.	$ 25.00	$ 15,000.00
12" Gate Valve & Box	2	Each	$ 1,900.00	$ 3,800.00
Transfer Sump	1	Each	$ 25,000.00	$ 25,000.00
Transfer Building	1	Each	$ 15,000.00	$ 15,000.00
Backwash Piping	650	L.F.	$ 18.00	$ 11,700.00
Backwash Overflow	1	L.S.	$ 1,800.00	$ 1,800.00
Backwash Outlet	1	L.S.	$ 3,000.00	$ 3,000.00
Pre- Engineered Building	1	L.S.	$ 110,000.00	$ 110,000.00
WTP - Building - General	1	L.S.	$ 135,000.00	$ 135,000.00
WTP - Building - Electrical	1	L.S.	$ 125,000.00	$ 125,000.00
WTP - Building - Mechanical	1	L.S.	$ 50,000.00	$ 50,000.00
Furnish Water Treatment Equipment	1	L.S.	$ 675,000.00	$ 675,000.00
Install Water Treatment Equipment	1	L.S.	$ 125,000.00	$ 125,000.00
Furnish & Install Chemical Feed Equipment	1	L.S.	$ 150,000.00	$ 150,000.00
Process Piping and Valves	1	L.S.	$ 85,000.00	$ 85,000.00
Intake Pumps	1	L.S.	$ 25,000.00	$ 25,000.00
Transfer Pumps	1	L.S.	$ 25,000.00	$ 25,000.00
Control System	1	L.S.	$ 175,000.00	$ 175,000.00
Electrical Service to Site	1	L.S.	$ 22,000.00	$ 22,000.00
Electrical Service on Site	1	L.S.	$ 5,000.00	$ 5,000.00
Septic Tank / Drainfield	1	L.S.	$ 4,000.00	$ 4,000.00
Laboratory Equipment	1	L.S.	$ 8,500.00	$ 8,500.00
Seeding	12	Acres	$ 1,500.00	$ 18,000.00
Fencing	5000	L.F.	$ 5.00	$ 25,000.00
Testing Laboratory Services	1	L.S.	$ 7,000.00	$ 7,000.00
Chemical Allowance	1	L.S.	$ 5,000.00	$ 5,000.00
Pilot Studies	1	L.S.	$ 75,000.00	$ 75,000.00
		Total Estimated Bid		$ 49,323,700.00
		Contingency		$ 4,932,400.00
		Total Estimated Construction		$ 54,256,100.00
		Engineering Design		$ 4,439,100.00
		Engineering Con. Admin		$ 3,452,700.00
		Legal/administration		$ 542,600.00
		Estimated Project		$ 62,690,500.00

Pipe2000 [Missouri_FlowWell]

File Edit View Analyze Move Labels Facilities Management Tools Help

KYPipe: GPM Eq: HW Table Index # Node:2726

Map | Map Settings | System Data | Other Data | Setup/Defaults | Report

Print | Clear | Font | Load/Swap | Customize | All

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PUMP/LOSS ELEMENT DATA

THERE IS A PUMP AT NODE       2045; USEFUL POWER =     1.75 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2046; USEFUL POWER =     5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2047; USEFUL POWER =     5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2050; USEFUL POWER =    60.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2054; USEFUL POWER =    30.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2055; USEFUL POWER =    15.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2057; USEFUL POWER =     5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2058; USEFUL POWER =    20.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2483; USEFUL POWER =    35.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2591; USEFUL POWER =     3.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2592; USEFUL POWER =     5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2595; USEFUL POWER =    75.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE       2597; USEFUL POWER =     7.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-1; USEFUL POWER =     0.75 (Efficiency =   0.75%)
```

X : 766580.59 Y : 465439.167 D : 183540.25 Analyze P Flow N Pres A Case 0 B Case 0

Pipe2000 [Missouri_FlowWell]

File Edit View Analyze Move Labels Facilities Management Tools Help

KYPipe: GPM Eq: HW Table Index # Node:2726

Map | Map Settings | System Data | Other Data | Setup/Defaults | Report

Print | Clear | Font | Load/Swap | Customize | All

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THERE IS A PUMP AT NODE     Pump-2; USEFUL POWER =     1.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-3; USEFUL POWER =     1.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-4; USEFUL POWER =     0.25 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-5; USEFUL POWER =     0.50 (Efficiency =   1.00%)
THERE IS A PUMP AT NODE     Pump-6; USEFUL POWER =     0.25 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-7; USEFUL POWER =     0.15 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-8; USEFUL POWER =     0.10 (Efficiency =  75.00%)
```

END NODE DATA

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)
2045		0.00	2700.65	
2046		0.00	2632.51	
2047		0.00	2436.45	
2048		----	2656.56	2736.00
2049		----	2437.89	2517.80
2050		0.00	2468.50	
2051		----	2466.40	2546.00

X : 766580.59 Y : 465439.167 D : 183540.25 Analyze P Flow N Pres A Case 0 B Case 0

Inventory/Cost Summary

Pipe Type	Number	Total Length	Cost/Unit	Total Cost
PVC - 100 - 4	4	65812	7.74	509387.26
C - 100 - 6	2	5808	9.03	52448.53
C - 160 - 2.5	15	206001	7.51	1547067.24
PVC - 160 - 3	32	270109	7.65	2066333.75
PVC - 160 - 4	104	639207	8.04	5139221.02
PVC - 160 - 5	11	65171	8.67	565028.80
PVC - 160 - 6	28	193366	9.24	1786700.22
PVC - 160 - 8	40	110520	10.79	1192506.76
PVC - 160 - 10	32	139365	12.88	1795024.20
PVC - 200 - 3	1	3058	7.78	23794.40
PVC - 200 - 4	23	196163	8.00	1569303.50
PVC - 200 - 5	2	8162	9.05	73868.24
PVC - 200 - 6	9	212389	9.72	2064416.88
PVC - 200 - 8	83	925735	11.60	10738522.28
PVC - 200 - 10	29	108076	18.37	1985354.26
PVC - 250 - 1	115	571380	4.00	2285521.13
PVC - 250 - 1.5	9	881362	7.40	6522080.76
PVC - 250 - 2	4	18942	7.45	141114.28
PVC - 250 - 2.5	12	137823	7.65	1054348.69
PVC - 250 - 3	3	23950	7.98	191118.40
PVC - 250 - 4	8	44396	8.62	382691.51
PVC - 250 - 5	6	32869	9.45	310615.86
PVC - 250 - 6	2	14790	10.51	155440.23
PVC - 250 - 8	4	22653	12.97	293806.06
PVC - 250 - 10	22	120392	16.31	1963585.94
Total	600	5017497	8.85	44409300.19
Not Specified	4	1616	.00	.00

No fittings specified in system

Device Summary

[illegible] junction nodes
11 tanks
1 resevervoirs
21 pumps
1 regulators
2128 intermediate nodes

P- 30	2517	2436	12324.53	4.00	140.0000	0.00
P- 31	2570	2484	4774.48	6.00	140.0000	0.00
P- 32	2452	2453	6867.79	4.00	140.0000	0.00
P- 33	2438	2439	5251.16	4.00	140.0000	0.00
P- 34	2370	@-2483	4386.12	10.00	140.0000	0.00
P- 35	2444	2445	8202.76	4.00	140.0000	0.00
P- 36	2286	2062	858.79	8.00	140.0000	0.00
37	2391	2392	9711.68	4.00	140.0000	0.00
38	2387	2388	271.73	4.00	140.0000	0.00
P- 39	2388	2389	1913.89	4.00	140.0000	0.00
P- 40	@-Pump-8	2186	11024.34	2.00	140.0000	0.00
P- 41	2398	2399	7475.41	4.00	140.0000	0.00
P- 42	2394	2395	8781.09	4.00	140.0000	0.00
P- 43	2048	2144	2556.17	3.00	140.0000	0.00
P- 44	2436	2444	13208.57	4.00	140.0000	0.00
P- 45	2577	2578	3057.66	8.00	140.0000	0.00
P- 46	J-390	J-494	5733.83	6.00	140.0000	0.00
P- 47	2286	2447	282.22	8.00	140.0000	0.00
P- 48	2495	2503	2827.01	6.00	140.0000	0.00
P- 49	2285	2515	711.47	2.50	140.0000	0.00
P- 50	2545	2544	12563.86	4.00	140.0000	0.00
P- 51	2503	2513	2403.68	6.00	140.0000	0.00
P- 52	2543	2542	9283.20	4.00	140.0000	0.00
P- 53	2522	2485	8265.19	8.00	140.0000	0.00
P- 54	2485	2486	7638.90	8.00	140.0000	0.00
P- 55	2486	2487	9214.73	8.00	140.0000	0.00
P- 56	2578	2260	1362.53	8.00	140.0000	0.00
P- 57	2489	2490	4577.07	8.00	140.0000	0.00
P- 58	2677	2678	77720.62	8.00	140.0000	0.00
P- 59	2483	2049	152.01	10.00	140.0000	0.00
P- 60	2482	2402	488.09	5.00	140.0000	0.00
P- 61	2506	2507	1071.55	8.00	140.0000	0.00
P- 62	2282	2283	147.16	8.00	140.0000	0.00
P- 63	2592	2508	5421.72	8.00	140.0000	0.00
P- 64	2421	2430	2913.37	5.00	140.0000	0.00
P- 65	2442	Pump-4	1411.45	3.00	140.0000	0.00
P- 66	2386	2400	5285.72	4.00	140.0000	0.00
P- 67	2401	2403	1501.23	10.00	140.0000	0.00
P- 68	2406	J- 32	4814.08	10.00	140.0000	0.00
69	2285	2516	248.58	8.00	140.0000	0.00
70	2448	2449	82.82	4.00	140.0000	0.00
P- 71	2450	2451	5805.31	4.00	140.0000	0.00
P- 72	2509	2510	3218.21	8.00	140.0000	0.00
P- 73	2508	2509	1751.92	8.00	140.0000	0.00
P- 74	2514	2512	582.77	8.00	140.0000	0.00
P- 75	2299	2300	1212.66	4.00	140.0000	0.00
P- 76	2544	2543	3802.09	4.00	140.0000	0.00
P- 77	2276	2318	154.42	4.00	140.0000	0.00
P- 78	2349	2350	3583.97	10.00	140.0000	0.00
P- 79	2318	2319	1906.17	4.00	140.0000	0.00
P- 80	2365	2366	2767.51	10.00	140.0000	0.00
P- 81	2364	2365	6324.14	10.00	140.0000	0.00
P- 82	2363	2364	5310.94	10.00	140.0000	0.00
P- 83	2361	2362	2133.54	10.00	140.0000	0.00
P- 84	2550	2291	337.80	8.00	140.0000	0.00
P- 85	2470	2072	5969.68	6.00	140.0000	0.00
P- 86	2469	2470	8820.07	6.00	140.0000	0.00
P- 87	2449	2450	5035.86	4.00	140.0000	0.00
P- 88	2524	2546	2250.70	4.00	140.0000	0.00
P- 89	2555	2556	11094.39	8.00	140.0000	0.00
P- 90	2445	2448	1941.58	4.00	140.0000	0.00
P- 91	2414	2415	9631.26	4.00	140.0000	0.00
P- 92	J-492	2239	55107.14	1.50	140.0000	0.00
P- 93	2416	2417	7312.31	4.00	140.0000	0.00
P- 94	2413	2414	5897.97	4.00	140.0000	0.00
P- 95	2419	@-Pump-5	3091.94	4.00	140.0000	0.00
P- 96	Pump-6	J-773	846.85	2.50	140.0000	0.00
P- 97	2419	2420	166.69	4.00	140.0000	0.00
P- 98	2408	2420	1236.48	4.00	140.0000	0.00
P- 99	2409	2408	2951.65	4.00	140.0000	0.00
P-100	2492	2493	885.67	8.00	140.0000	0.00
101	2536	2535	2193.40	4.00	140.0000	0.00
-102	2410	2409	5117.44	4.00	140.0000	0.00
P-103	2411	2410	1572.87	4.00	140.0000	0.00
P-104	2412	2411	2303.59	4.00	140.0000	0.00
P-105	2214	2288	5928.84	4.00	140.0000	0.00
P-106	2215	2195	3391.00	1.00	140.0000	0.00
P-107	2288	2598	41008.55	4.00	140.0000	0.00
P-108	2215	2063	81280.98	2.50	140.0000	0.00

P-188	2517	2297	10175.68	4.00	140 0000	0.00
P-189	2089	2088	8095.71	8.00	140.0000	0 00
P-190	2401	2402	828 08	10 00	140.0000	0.00
P-191	2297	2307	6687.26	4.00	140 0000	0.00
P-192	2101	2577	7217.86	8 00	140.0000	0 00
P-193	2131	2058	98 20	10 00	140 0000	0 00
P-194	2136	2212	4751.04	8.00	140 0000	0.00
195	2212	2522	4022 55	8.00	140.0000	0 00
196	2280	2279	2505 91	4 00	140.0000	0 00
P-197	2281	2320	4428.44	4 00	140 0000	0.00
P-198	2472	2473	14048 87	3.00	140 0000	0.00
P-199	2497	2498	1278 40	8.00	140.0000	0 00
P-200	2482	2057	285.80	5 00	140.0000	0 00
P-201	2290	2429	11598.90	6.00	140 0000	0.00
P-202	J- 32	J-224	577 43	10.00	140.0000	0 00
P-203	2290	@-2057	242.76	5 00	140.0000	0 00
P-204	2591	2598	41.15	4.00	140 0000	0 00
P-205	2482	2055	152 35	10.00	140 0000	0 00
P-206	2597	2596	1209.18	4 00	140.0000	0 00
P-207	@-2597	2525	10270.25	4 00	140 0000	0 00
P-208	2296	2507	1372 08	8.00	140 0000	0.00
P-209	2556	2557	1556.19	8.00	140.0000	0 00
P-210	2307	2317	2012.14	4 00	140.0000	0 00
P-211	2045	2321	3088.28	4 00	140 0000	0 00
P-212	2283	2261	9803 38	8.00	140 0000	0.00
P-213	2060	2471	380.07	10.00	140.0000	0.00
P-214	2593	2296	244.35	8 00	140.0000	0.00
P-215	2061	2471	1968 41	2 50	140 0000	0 00
P-216	2072	2687	3191 05	6.00	140.0000	0.00
P-217	2047	2049	208.08	3 00	140.0000	0.00
P-218	2179	J-774	260447 25	1 50	140 0000	0 00
P-219	2185	2155	813 56	1.00	140 0000	0 00
P-220	2276	2317	1380.44	4.00	140.0000	0.00
P-221	2075	2243	23205 21	8 00	140.0000	0 00
P-222	2075	2077	1198 91	1 00	140 0000	0 00
P-223	2350	2351	2359 22	10.00	140.0000	0 00
P-224	2078	2244	12650.12	8 00	140.0000	0.00
P-225	2078	2080	7875 48	1 00	140 0000	0 00
P-226	2079	2248	1303 13	8 00	140 0000	0 00
227	2079	2081	1599.76	1.00	140.0000	0.00
228	2131	2086	5263.07	3 00	140.0000	0.00
P-229	2083	2082	7445 98	1 00	140 0000	0 00
P-230	2083	2255	5177.33	2.50	140.0000	0 00
P-231	2319	2278	1292 08	4.00	140.0000	0.00
P-232	2084	2252	24818 83	3 00	140 0000	0.00
P-233	2084	2085	1565.35	1 00	140 0000	0 00
P-234	2086	2250	2113.08	3.00	140.0000	0 00
P-235	2351	2352	5521.39	10.00	140.0000	0 00
P-236	2087	2251	31 82	1 00	140.0000	0.00
P-237	2088	2101	5547 21	8 00	140 0000	0.00
P-238	2088	2091	4888 33	1.00	140 0000	0 00
P-239	2574	2111	5032.03	2.50	140.0000	0 00
P-240	2090	2092	1554.79	1.00	140.0000	0 00
P-241	2090	2096	1223 06	1 00	140.0000	0.00
P-242	2279	2278	250 11	4 00	140 0000	0.00
P-243	2094	2099	1118.45	1.00	140 0000	0 00
P-244	2094	2097	196.61	1.00	140.0000	0 00
P-245	2094	2098	1603 36	1 00	140.0000	0.00
P-246	2099	2090	2081 10	1 00	140 0000	0.00
P-247	2494	2496	7908.35	8.00	140 0000	0.00
P-248	2352	2353	8729.80	10.00	140.0000	0 00
P-249	2099	2100	279 32	1 00	140.0000	0.00
P-250	2102	2094	2775 63	2 50	140 0000	0.00
P-251	2102	2103	376.73	1.00	140.0000	0 00
P-252	2104	2102	7765 03	2.50	140.0000	0.00
P-253	2280	2281	75 32	4 00	140 0000	0.00
P-254	2104	2105	3216.22	1.00	140 0000	0 00
P-255	2105	2106	317 26	1.00	140.0000	0 00
P-256	2105	2107	209 73	1 00	140.0000	0.00
P-257	2108	2104	15956.01	2 50	140 0000	0.00
P-258	2108	2110	698.41	1.00	140 0000	0 00
259	2111	2108	5277 34	2.50	140.0000	0.00
260	2355	2356	3150 77	10 00	140.0000	0.00
P-261	2111	2263	767.13	1.00	140 0000	0 00
P-262	2569	2119	2305 34	1.00	140.0000	0 00
P-263	2114	2564	1984.44	8 00	140.0000	0.00
P-264	2315	2316	2257.28	4 00	140 0000	0.00
P-265	2114	2115	1546 72	1.00	140.0000	0.00
P-266	2114	2264	1612 88	1.00	140.0000	0 00

P-347	2342	2189	5533.50	2.50	140.0000	0.00
P-348	2189	2182	521.74	2.50	140.0000	0.00
P-349	2182	2183	1193.94	1.00	140.0000	0.00
P-350	2182	2181	7222.36	2.50	140.0000	0.00
P-351	2181	2188	1287.61	1.00	140.0000	0.00
P-352	2181	2179	4644.63	2.50	140.0000	0.00
P-353	2301	2302	5314.46	4.00	140.0000	0.00
354	2324	2193	3119.15	1.00	140.0000	0.00
355	2382	2384	4597.11	10.00	140.0000	0.00
P-356	2192	2196	10810.79	1.00	140.0000	0.00
P-357	2393	2192	475.52	1.00	140.0000	0.00
P-358	2395	2194	6189.15	1.00	140.0000	0.00
P-359	2398	2198	8571.08	1.00	140.0000	0.00
P-360	2198	2197	15937.83	1.00	140.0000	0.00
P-361	2198	2200	1576.23	1.00	140.0000	0.00
P-362	2208	2417	2669.01	4.00	140.0000	0.00
P-363	2534	2232	6322.23	1.00	140.0000	0.00
P-364	2302	2303	3338.99	4.00	140.0000	0.00
P-365	2203	2068	10059.87	4.00	140.0000	0.00
P-366	2203	2204	1771.46	1.00	140.0000	0.00
P-367	2498	2499	2581.81	8.00	140.0000	0.00
P-368	2325	2326	15611.43	10.00	140.0000	0.00
P-369	2204	2205	624.80	1.00	140.0000	0.00
P-370	2204	2207	6927.39	1.00	140.0000	0.00
P-371	2407	2206	5802.81	1.00	140.0000	0.00
P-372	2208	Pump-5	4002.28	4.00	140.0000	0.00
P-373	2208	2210	57513.58	4.00	140.0000	0.00
P-374	2411	Pump-2	361.55	2.50	140.0000	0.00
P-375	2303	2304	2163.57	4.00	140.0000	0.00
P-376	2211	2209	2089.82	1.00	140.0000	0.00
P-377	2211	J-754	574.81	1.00	140.0000	0.00
P-378	2216	2213	1030.19	1.00	140.0000	0.00
P-379	2216	2219	1769.20	1.00	140.0000	0.00
P-380	2324	2325	3830.87	10.00	140.0000	0.00
P-381	2218	2216	2244.46	1.50	140.0000	0.00
P-382	2218	2221	3695.89	1.00	140.0000	0.00
P-383	2221	2220	153.76	1.00	140.0000	0.00
P-384	2221	2223	2070.52	1.00	140.0000	0.00
P-385	2426	2224	1449.04	1.00	140.0000	0.00
386	2585	2586	5171.39	8.00	140.0000	0.00
387	2225	2412	5272.30	4.00	140.0000	0.00
P-388	2225	2226	131.18	1.00	140.0000	0.00
P-389	2422	2229	34583.22	1.00	140.0000	0.00
P-390	2227	2066	754.45	4.00	140.0000	0.00
P-391	2227	2217	49379.68	1.00	140.0000	0.00
P-392	2326	2327	3571.45	10.00	140.0000	0.00
P-393	2217	2228	139.52	1.00	140.0000	0.00
P-394	2217	2228	251.32	1.00	140.0000	0.00
P-395	2228	2231	12197.24	1.00	140.0000	0.00
P-396	2412	2230	12372.52	1.00	140.0000	0.00
P-397	2304	2305	2473.04	4.00	140.0000	0.00
P-398	2232	2201	1802.91	1.00	140.0000	0.00
P-399	2232	2234	39966.54	1.00	140.0000	0.00
P-400	2233	2215	9716.28	3.00	140.0000	0.00
P-401	2233	2235	190425.78	1.50	140.0000	0.00
P-402	2116	2236	781.50	1.00	140.0000	0.00
P-403	2237	2158	16138.30	1.50	140.0000	0.00
P-404	2329	2330	5881.63	10.00	140.0000	0.00
P-405	2237	J-492	113653.69	1.50	140.0000	0.00
P-406	2238	2138	2391.66	1.00	140.0000	0.00
P-407	2238	2241	33389.62	2.50	140.0000	0.00
P-408	2306	2305	8252.78	4.00	140.0000	0.00
P-409	2240	2587	8423.24	8.00	140.0000	0.00
P-410	2240	2093	10252.79	1.00	140.0000	0.00
P-411	2242	2553	6117.21	8.00	140.0000	0.00
P-412	2242	2109	4367.10	1.00	140.0000	0.00
P-413	2243	2679	7771.92	8.00	140.0000	0.00
P-414	2244	2075	8627.26	8.00	140.0000	0.00
P-415	2245	2683	4091.42	8.00	140.0000	0.00
P-416	2330	2331	2147.91	10.00	140.0000	0.00
P-417	2246	2245	5794.65	8.00	140.0000	0.00
418	2247	2246	3318.26	8.00	140.0000	0.00
419	2306	2308	4277.42	4.00	140.0000	0.00
P-420	2248	2247	7554.85	8.00	140.0000	0.00
P-421	2248	2249	778.55	1.00	140.0000	0.00
P-422	2250	2087	3161.95	3.00	140.0000	0.00
P-423	2251	2084	2712.93	3.00	140.0000	0.00
P-424	2252	2083	11648.56	2.50	140.0000	0.00
P-425	2252	2254	791.91	1.00	140.0000	0.00

P-505	@-Pump-7	J-872	36774.09	1.50	140.0000	0.00
P-506	2679	2076	1092.95	1.00	140.0000	0.00
P-507	2679	2680	2702.69	8.00	140.0000	0.00
P-508	2502	2504	3753.62	8.00	140.0000	0.00
P-509	2680	2678	5750.13	8.00	140.0000	0.00
P-510	2680	J-390	31944.72	6.00	140.0000	0.00
P-511	2683	2078	20979.15	8.00	140.0000	0.00
512	2683	2684	109166.64	8.00	140.0000	0.00
513	@-Pump-3	I- 1	29.80	6.00	140.0000	0.00
P-514	J-873	2599	150.23	8.00	140.0000	0.00
P-519	2490	2491	1130.54	8.00	140.0000	0.00
P-520	2687	@-2047	2617.20	6.00	140.0000	0.00
P-522	2681	2472	73444.12	8.00	140.0000	0.00
P-523	2348	2681	10421.72	8.00	140.0000	0.00
P-524	2472	J-529	32779.02	8.00	140.0000	0.00
P-525	2458	2459	13889.70	3.00	140.0000	0.00
P-526	2561	2562	5007.32	8.00	140.0000	0.00
P-527	2457	2458	16725.66	3.00	140.0000	0.00
P-528	2456	2457	12330.07	3.00	140.0000	0.00
P-529	2480	2462	15856.83	3.00	140.0000	0.00
P-530	2463	@-2046	2059.13	3.00	140.0000	0.00
P-531	@-2595	2590	705.76	8.00	140.0000	0.00
P-532	2451	2452	10704.83	4.00	140.0000	0.00
P-533	2565	2265	1621.18	8.00	140.0000	0.00
P-534	2573	2574	10344.85	8.00	140.0000	0.00
P-535	2570	2569	10555.42	8.00	140.0000	0.00
P-536	2564	2562	3258.18	8.00	140.0000	0.00
P-537	2560	2561	5487.52	8.00	140.0000	0.00
P-538	2452	2191	16592.89	2.50	140.0000	0.00
P-539	2114	@-2050	75.71	8.00	140.0000	0.00
P-540	2454	2437	12305.58	4.00	140.0000	0.00
P-541	2050	2051	42.08	8.00	140.0000	0.00
P-542	2046	2048	181.58	3.00	140.0000	0.00
P-543	2484	2495	2610.47	6.00	140.0000	0.00
P-544	2558	2132	1555.04	8.00	140.0000	0.00
P-545	2487	2488	7043.30	8.00	140.0000	0.00
P-546	2488	2489	5485.16	8.00	140.0000	0.00
P-547	2510	2511	2615.09	8.00	140.0000	0.00
P-548	2455	2465	156.02	3.00	140.0000	0.00
549	2465	2472	6033.72	3.00	140.0000	0.00
550	2511	2512	1601.50	8.00	140.0000	0.00
P-551	2599	@-2058	103.70	10.00	140.0000	0.00
P-552	2566	2565	5301.14	8.00	140.0000	0.00
P-553	2439	2440	10720.13	4.00	140.0000	0.00
P-554	@-2592	2593	137.21	8.00	140.0000	0.00
P-555	2506	2505	3034.17	8.00	140.0000	0.00
P-556	2504	2505	4277.69	8.00	140.0000	0.00
P-557	2496	2497	1438.42	8.00	140.0000	0.00
P-558	2348	J- 57	475.57	10.00	140.0000	0.00
P-559	2253	2275	3990.02	8.00	140.0000	0.00
P-560	2384	2324	4454.37	10.00	140.0000	0.00
P-561	2384	2383	351.32	10.00	140.0000	0.00
P-562	2327	2328	187.40	10.00	140.0000	0.00
P-646	J-149	J-710	5177.95	6.00	140.0000	0.00
P-699	J-520	J-703	18066.62	6.00	140.0000	0.00
P-700	J-521	J-526	8194.39	6.00	140.0000	0.00
P-701	J-522	J-520	1526.08	6.00	140.0000	0.00
P-702	J-528	J-155	8812.21	6.00	140.0000	0.00
P-703	J-525	J-159	23079.76	6.00	140.0000	0.00
P-704	J-528	J-512	8606.16	6.00	140.0000	0.00
P-705	J-870	J-514	1223.19	6.00	140.0000	0.00
P-706	J-530	J-870	2193.80	6.00	140.0000	0.00
P-707	J-531	J-530	12354.83	6.00	140.0000	0.00
P-750	J-703	J-521	8268.82	6.00	140.0000	0.00
P-752	J-692	J-693	4346.38	4.00	140.0000	0.00
P-753	J-693	J-694	1965.75	4.00	140.0000	0.00
P-754	J-694	J-695	11502.92	4.00	140.0000	0.00
P-755	J-695	J-697	2973.55	4.00	140.0000	0.00
P-756	J-696	J-698	5386.49	4.00	140.0000	0.00
P-757	J-697	J-696	2825.95	4.00	140.0000	0.00
P-758	J-698	J-699	2826.79	4.00	140.0000	0.00
759	J-699	J-700	3422.46	4.00	140.0000	0.00
760	J-700	J-701	4993.99	4.00	140.0000	0.00
P-761	J-701	J-702	3231.28	4.00	140.0000	0.00
P-762	J-702	JS-5	2807.83	4.00	140.0000	0.00
P-768	J-155	J-709	3212.93	6.00	140.0000	0.00
P-769	J-709	Pump-3	7097.80	6.00	140.0000	0.00
P-770	J-710	J-522	6087.44	6.00	140.0000	0.00
P-806	I- 1	J-526	1996.32	6.00	140.0000	0.00

2049		----	2437.89	2517.80
2050		0.00	2468.50	
2051		----	2466.40	2546.00
2052		----	2822.21	2902.00
2054		0.00	2832.51	
2055	CohagenPump	0.00	2620.01	
2057	HellCrkPump	0.00	2624.96	
2058		0.00	2280.15	
2060		0.00	2429.39	
2061		0.00	2438.28	
2062		0.00	2365.35	
2063		2.00	2247.57	
2064		0.00	2361.12	
2065		0.00	2528.44	
2066		0.00	2874.47	
2067		0.00	3036.38	
2068		0.00	2914.50	
2069		0.00	2966.07	
2070		0.00	2934.71	
2071		0.00	3044.81	
2072		0.00	2433.43	
2073		2.00	2403.57	
2074		2.00	2552.13	
2075		2.00	2074.57	
2076		0.00	2035.95	
2077		2.00	2029.98	
2078	CommunityHal	0.00	2013.61	
2079		0.00	1986.97	
2080		2.00	2239.96	
2081		2.00	1981.95	
2082		2.00	2003.47	
2083		0.00	2015.51	
2084		0.00	2116.89	
2085		2.00	2116.40	
2086		0.00	2176.44	
2087		0.00	2149.54	
2088		2.00	2294.84	
2089		2.00	2375.62	
2090		0.00	2302.00	
2091		0.00	2343.96	
2092		2.00	2223.03	
2093		0.00	2493.47	
2094		0.00	2343.89	
2096		2.00	2227.46	
2097		0.00	2330.28	
2098		2.00	2368.20	
2099		0.00	2304.39	
2100		0.00	2322.47	
2101		0.00	2337.76	
2102		0.00	2416.07	
2103		0.00	2383.39	
2104		0.00	2363.68	
2105		0.00	2258.36	
2106		2.00	2205.38	
2107		0.00	2282.38	
2108		0.00	2359.08	
2109		0.00	2358.13	
2110		0.00	2320.30	
2111		0.00	2442.25	
2112		2.00	2397.53	
2113		2.00	2332.41	
2114		2.00	2472.67	
2115		2.00	2480.44	
2116		2.00	2432.97	
2117		2.00	2451.44	
2119		0.00	2268.47	
2121		0.00	2511.81	
2123		0.00	2479.46	
2125		2.00	2329.56	
2126		0.00	2588.22	
2127		0.00	2603.01	
2128		0.00	2580.05	
2129		0.00	2467.68	
2130		0.00	2546.55	
2131		0.00	2280.77	
2132		0.00	2416.66	
2133		0.00	2438.02	
2134		0.00	2438.22	
2135		2.00	2261.64	

2227		0.00	2884.51
2228		0.00	2900.88
2229		2.00	2529.42
2230		2.00	2764.86
2231		2.00	2313.28
2232		0.00	3204.75
2233		0.00	2347.30
2234		2.00	2973.19
2235		2.00	2228.54
2236		2.00	2419.38
2237		0.00	3309.77
2238		0.00	2511.41
2239		2.00	2898.71
2240		0.00	2451.01
2241		4.00	2707.38
2242		0.00	2461.97
2243	FourCorners	0.00	2106.46
2244		0.00	2062.10
2245		2.00	2036.87
2246		0.00	1986.94
2247		2.00	1982.94
2248		2.00	1991.83
2249		2.00	2015.32
2250		2.00	2161.87
2251		0.00	2146.68
2252		0.00	2104.06
2253		0.00	2451.73
2254		2.00	2112.33
2255		0.00	2019.84
2256		2.00	2012.20
2257		0.00	2236.12
2258		2.00	2217.78
2259		2.00	2127.03
2260		0.00	2310.13
2261		0.00	2451.73
2262		2.00	2344.35
2263		2.00	2336.02
2264		2.00	2386.97
2265		0.00	2431.69
2266		2.00	2409.18
2267		2.00	2406.33
2268		2.00	2459.71
2269		0.00	2379.19
2270		2.00	2382.97
2271		0.00	2595.99
2272		0.00	2507.93
2273		2.00	2761.94
2274		2.00	2741.27
2275		0.00	2440.09
2276		0.00	2581.79
2277		0.00	2917.28
2278		0.00	2611.74
2279		0.00	2621.32
2280		0.00	2606.33
2281		0.00	2593.89
2282		0.00	2373.16
2283		0.00	2376.70
2284		2.00	2260.23
2285		0.00	2501.90
2286		0.00	2377.62
2288		0.00	2918.30
2290		0.00	2626.24
2291		0.00	2549.27
2292		0.00	2549.27
2293		0.00	2719.42
2295		0.00	2310.66
2296		0.00	2490.61
2297		1.00	2529.98
2298		1.00	2895.11
2299		0.00	2869.12
2300		0.00	2884.74
2301		1.00	2760.30
2302		1.00	2718.73
2303		1.00	2745.57
2304		1.00	2762.23
2305		1.00	2780.21
2306		1.00	2702.06
2307		1.00	2495.60
2308		1.00	2686.18

2388		0.00	2601.70
2389		0.00	2619.15
2390		0.00	2637.26
2391		0.00	2659.84
2392		0.00	2773.85
2393		2.00	2753.34
2394		0.00	2768.27
2395		4.00	2766.00
2396		0.00	2898.68
2397		0.00	2957.47
2398		4.00	3000.88
2399		0.00	2987.92
2400		2.00	2753.54
2401		0.00	2627.65
2402		0.00	2624.40
2403	WellCapacity	250.00	2606.69
2404		0.00	2574.86
2405		0.00	2621.84
2406		0.00	2632.38
2407		6.00	2882.28
2408		2.00	2952.13
2409		2.00	3005.67
2410		2.00	3042.38
2411		4.00	2976.01
2412	BrusettChurc	2.00	3013.67
2413		2.00	2997.80
2414		10.00	3193.66
2415		2.00	3142.05
2416		0.00	3118.76
2417		2.00	3111.90
2419		0.00	2994.58
2420		0.00	2992.58
2421		2.00	2248.22
2422		4.00	2827.45
2423		2.00	2798.39
2424		0.00	2811.12
2425		2.00	2661.94
2426		2.00	2833.85
2427		2.00	2841.53
2428		2.00	2766.00
2429		2.00	2646.25
2430		2.00	2259.25
2431		2.00	2283.95
2432		4.00	2334.28
2433		0.00	2714.50
2434		6.00	2950.19
2435		0.00	2876.24
2436		2.00	2419.42
2437		0.00	2413.28
2438		4.00	2389.40
2439		0.00	2408.39
2440		4.00	2393.01
2441		0.00	2459.18
2442		4.00	2424.57
2443		2.00	2382.67
2444		2.00	2425.72
2445		4.00	2410.92
2446		0.00	2362.23
2447		15.00	2386.18
2448		0.00	2368.99
2449		0.00	2355.24
2450		0.00	2365.48
2451		2.00	2498.49
2452		2.00	2399.80
2453		0.00	2366.07
2454		2.00	2394.94
2455		2.00	2275.78
2456		4.00	2517.65
2457		2.00	2519.32
2458		5.00	2763.25
2459		2.00	2615.58
2460		2.00	2630.34
2461		2.00	2721.55
2462		2.00	2576.70
2463		0.00	2629.78
2464		4.00	2644.61
2465		2.00	2274.24
2466		2.00	2497.27
2467		0.00	2520.99

2548		2.00	2594.55	
2549		0.00	2473 22	
2550		2 00	2565 81	
2551		0 00	2498.75	
2552		2.00	2497 04	
2553		0 00	2394 61	
2554		2 00	2518.76	
2555		0.00	2517 15	
2556		2.00	2360 82	
2557		0 00	2380 61	
2558		5 00	2431.13	
2559		2.00	2374.80	
2560		5 00	2446 55	
2561		0 00	2542 58	
2562		5.00	2442.48	
2564		0 00	2410.66	
2565		0 00	2406 39	
2566		2.00	2356 88	
2569		2 00	2309.67	
2570		4 00	2396.06	
2573		4.00	2456 62	
2574		5.00	2364.53	
2577		0 00	2229.56	
2578		2.00	2303.14	
2579		2.00	2415 55	
2580		2.00	2258 85	
2583		0.00	2416 96	
2584		4 00	2458.20	
2585		0.00	2517.58	
2586		2 00	2398 49	
2587		0 00	2478.57	
2588		2.00	2440.19	
2590		----	1967 45	1975.00
2591		0 00	2869.02	
2592		0 00	2505.44	
2593		----	2493.40	2573 00
2594	ManiageSprin	0 00	2714 63	
2595		0 00	2021 52	
2596		----	2865.81	2945.00
2597		0.00	2865.81	
2598	SteveForks	----	2869 02	2949 00
2599	p-514	----	2282.90	2365 00
2675		0 00	2869.02	
2677		0.00	2560.03	
2678		0 00	2375 29	
2679		0 00	2220 63	
2680		0.00	2275.49	
2681		0.00	2513.25	
2682		2.00	2423.16	
2683		0 00	2033 30	
2684		0 00	2591 04	
2685		0 00	2430.01	
2686		0 00	2600.65	
2687		0.00	2416.99	
2688		0.00	2540 97	
2694		----	2699 24	2779.00
J- 8		0 00	2361.00	
J- 32		0.00	2619.88	
J- 56		0.00	2824 53	
J- 57		0 00	2463 51	
J-149		0 00	2361.00	
J-155		0.00	2820.00	
J-159		0.00	2383 00	
J-224		0 00	2620 01	
J-390		0 00	2072.40	
J-492		2.00	2885.30	
J-494		0 00	2093.17	
J-512		0 00	2560 00	
J-514		2.00	2300.00	
J-520		0.00	2420.00	
J-521		0 00	2755.00	
-522		0 00	2410 00	
J-525		0.00	2590.00	
J-526		0.00	2639.00	
J-528		0 00	2662 00	
J-529		0.00	2372 37	
J-530		0.00	2350.00	
J-531		0 00	2350.00	
J-692		0.00	2900 00	

P- 6	2335	2336	-429.81	8.15	0.00	1.76	1.12	1.12
P- 7	2432	2594	-10.00	0.15	0.00	0.16	0.03	0.03
P- 8	2424	2426	-24.00	2.53	0.00	0.39	0.16	0.16
P- 9	2467	2468	24.33	0.47	0.00	0.28	0.07	0.07
P- 10	2191	2268	4.00	0.88	0.00	0.26	0.17	0.17
P- 11	2406	2539	86.38	6.16	0.00	2.21	4.99	4.99
P- 12	2404	2405	0.00	0.00	0.00	0.00	0.00	0.00
13	2403	2404	0.00	0.00	0.00	0.00	0.00	0.00
14	2541	2540	8.00	0.50	0.00	0.20	0.06	0.06
P- 15	2437	2438	41.00	4.71	0.00	1.05	1.26	1.26
P- 16	2441	2442	33.00	6.65	0.00	0.84	0.84	0.84
P- 17	2542	2541	14.00	0.96	0.00	0.36	0.17	0.17
P- 18	2373	2547	-300.00	1.32	0.00	1.23	0.58	0.58
P- 19	2527	2526	45.83	13.68	0.00	1.17	1.54	1.54
P- 20	2529	2528	73.38	6.73	0.00	1.87	3.69	3.69
P- 21	2528	2527	50.83	5.78	0.00	1.30	1.87	1.87
P- 22	2521	2520	7.16	0.01	0.00	0.05	0.00	0.00
P- 23	2573	2570	225.28	13.05	0.00	1.44	1.01	1.01
P- 24	2520	2519	7.16	0.04	0.00	0.08	0.01	0.01
P- 25	2521	2136	-11.16	0.01	0.00	0.07	0.00	0.00
P- 26	2500	2282	-31.16	0.02	0.00	0.20	0.03	0.03
P- 27	2517	2515	-70.23	0.31	0.00	0.45	0.12	0.12
P- 28	2443	2446	17.00	0.05	0.00	0.11	0.01	0.01
P- 29	2515	2514	-87.23	0.28	0.00	0.56	0.17	0.17
P- 30	2517	2436	61.00	32.31	0.00	1.56	2.62	2.62
P- 31	2570	2484	-1.16	0.00	0.00	0.01	0.00	0.00
P- 32	2452	2453	43.00	9.42	0.00	1.10	1.37	1.37
P- 33	2438	2439	37.00	5.45	0.00	0.94	1.04	1.04
P- 34	2370	2483	-317.48	2.81	0.00	1.30	0.64	0.64
P- 35	2444	2445	57.00	18.96	0.00	1.46	2.31	2.31
P- 36	2286	2062	-15.00	0.01	0.00	0.10	0.01	0.01
P- 37	2391	2392	-22.00	3.85	0.00	0.56	0.40	0.40
P- 38	2387	2388	-22.00	0.11	0.00	0.56	0.40	0.40
P- 39	2388	2389	-22.00	0.76	0.00	0.56	0.40	0.40
P- 40	Pump-8	2186	2.00	1.51	0.00	0.20	0.14	0.14
P- 41	2398	2399	-20.00	2.48	0.00	0.51	0.33	0.33
P- 42	2394	2395	-6.00	0.31	0.00	0.15	0.04	0.04
P- 43	2048	2144	30.33	7.46	0.00	1.38	2.92	2.92
P- 44	2436	2444	59.00	32.55	0.00	1.51	2.46	2.46
45	2577	2578	-252.28	3.80	0.00	1.61	1.24	1.24
46	J-390	J-494	-86.05	3.95	0.00	0.98	0.69	0.69
P- 47	2286	2447	15.00	0.00	0.00	0.10	0.01	0.01
P- 48	2495	2503	-3.16	0.00	0.00	0.04	0.00	0.00
P- 49	2285	2515	-15.00	1.37	0.00	0.98	1.92	1.92
P- 50	2545	2544	50.66	23.35	0.00	1.29	1.86	1.86
P- 51	2503	2513	-3.16	0.00	0.00	0.04	0.00	0.00
P- 52	2543	2542	42.66	12.55	0.00	1.09	1.35	1.35
P- 53	2522	2485	-13.16	0.04	0.00	0.08	0.01	0.01
P- 54	2485	2486	-15.16	0.05	0.00	0.10	0.01	0.01
P- 55	2486	2487	-17.16	0.08	0.00	0.11	0.01	0.01
P- 56	2578	2260	-254.28	1.72	0.00	1.62	1.26	1.26
P- 57	2489	2490	-23.16	0.07	0.00	0.15	0.01	0.01
P- 58	2677	2678	159.51	41.32	0.00	1.02	0.53	0.53
P- 59	2483	2049	-317.48	0.10	0.00	1.30	0.64	0.64
P- 60	2482	2402	-151.81	2.34	0.00	2.48	4.79	4.79
P- 61	2506	2507	-33.16	0.03	0.00	0.21	0.03	0.03
P- 62	2282	2283	-31.16	0.00	0.00	0.20	0.03	0.03
P- 63	2592	2508	94.23	1.09	0.00	0.60	0.20	0.20
P- 64	2421	2430	-2.00	0.00	0.00	0.03	0.00	0.00
P- 65	2442	Pump-4	8.00	0.35	0.00	0.36	0.25	0.25
P- 66	2386	2400	22.00	2.10	0.00	0.56	0.40	0.40
P- 67	2401	2403	250.00	0.62	0.00	1.02	0.41	0.41
P- 68	2406	J- 32	-108.38	0.42	0.00	0.44	0.09	0.09
P- 69	2285	2516	15.00	0.00	0.00	0.10	0.01	0.01
P- 70	2448	2449	53.00	0.17	0.00	1.35	2.02	2.02
P- 71	2450	2451	53.00	11.73	0.00	1.35	2.02	2.02
P- 72	2509	2510	92.23	0.62	0.00	0.59	0.19	0.19
P- 73	2508	2509	94.23	0.35	0.00	0.60	0.20	0.20
P- 74	2514	2512	-87.23	0.10	0.00	0.56	0.17	0.17
P- 75	2299	2300	19.00	0.37	0.00	0.49	0.30	0.30
P- 76	2544	2543	48.66	6.56	0.00	1.24	1.72	1.72
77	2276	2318	2.23	0.00	0.00	0.06	0.01	0.01
78	2349	2350	-681.88	9.47	0.00	2.79	2.64	2.64
P- 79	2318	2319	2.23	0.01	0.00	0.06	0.01	0.01
P- 80	2365	2366	-232.48	1.00	0.00	0.95	0.36	0.36
P- 81	2364	2365	-232.48	2.28	0.00	0.95	0.36	0.36
P- 82	2363	2364	-232.48	1.91	0.00	0.95	0.36	0.36
P- 83	2361	2362	-228.48	0.74	0.00	0.93	0.35	0.35
P- 84	2550	2291	-458.39	1.27	0.00	2.93	3.76	3.76

P-164	2345	2357	-405.81	7.58	0.00	1.66	1.01	1.01
P-165	2381	2382	-409.81	1.56	0.00	1.67	1.03	1.03
P-166	2366	2368	-234.48	0.50	0.00	0.96	0.37	0.37
P-167	2313	2312	-6.00	0.12	0.00	0.15	0.04	0.04
P-168	2473	2474	16.73	4.35	0.00	0.76	0.97	0.97
P-169	2474	2475	12.73	1.21	0.00	0.58	0.58	0.58
P-170	2475	2476	10.73	2.07	0.00	0.49	0.43	0.43
171	2476	2477	8.73	0.48	0.00	0.40	0.29	0.29
-172	2477	2478	4.73	0.32	0.00	0.21	0.09	0.09
P-173	2478	2479	0.73	0.01	0.00	0.03	0.00	0.00
P-174	2479	2456	-1.27	0.07	0.00	0.06	0.01	0.01
P-175	2295	2147	2.00	20.93	0.00	0.82	4.00	4.00
P-176	2459	2460	-39.01	11.88	0.00	1.77	4.65	4.65
P-177	2460	2461	-41.01	22.90	0.00	1.86	5.10	5.10
P-178	2312	2311	-7.00	0.25	0.00	0.18	0.05	0.05
P-179	2461	2480	-43.01	10.09	0.00	1.95	5.57	5.57
P-180	2462	2463	-49.01	21.70	0.00	2.22	7.10	7.10
P-181	2464	2466	26.33	21.11	0.00	1.19	2.24	2.24
P-182	2466	2467	24.33	10.98	0.00	1.10	1.94	1.94
P-183	2468	2469	22.33	0.81	0.00	0.25	0.06	0.06
P-184	2584	2585	-450.39	7.86	0.00	2.87	3.64	3.64
P-185	2588	2548	-454.39	20.86	0.00	2.90	3.70	3.70
P-186	2079	2523	366.02	31.02	0.00	2.34	2.48	2.48
P-187	2089	2574	246.28	23.06	0.00	1.57	1.19	1.19
P-188	2517	2297	4.23	0.19	0.00	0.11	0.02	0.02
P-189	2089	2088	-248.29	9.77	0.00	1.58	1.21	1.21
P-190	2401	2402	-250.00	0.34	0.00	1.02	0.41	0.41
P-191	2297	2307	3.23	0.08	0.00	0.08	0.01	0.01
P-192	2101	2577	-252.28	8.97	0.00	1.61	1.24	1.24
P-193	2131	2058	-270.28	0.05	0.00	1.10	0.48	0.48
P-194	2136	2212	-11.16	0.02	0.00	0.07	0.00	0.00
P-195	2212	2522	-11.16	0.02	0.00	0.07	0.00	0.00
P-196	2280	2279	-2.23	0.01	0.00	0.06	0.01	0.01
P-197	2281	2320	2.23	0.03	0.00	0.06	0.01	0.01
P-198	2472	2473	18.73	16.78	0.00	0.85	1.19	1.19
P-199	2497	2498	-27.16	0.03	0.00	0.17	0.02	0.02
P-200	2482	2057	36.00	0.10	0.00	0.59	0.33	0.33
P-201	2290	2429	36.00	1.59	0.00	0.41	0.14	0.14
P-202	J- 32	J-224	-108.38	0.05	0.00	0.44	0.09	0.09
203	2290	2057	-36.00	0.08	0.00	0.59	0.33	0.33
-204	2591	2598	-37.34	0.04	0.00	0.95	1.06	1.06
P-205	2482	2055	108.38	0.01	0.00	0.44	0.09	0.09
P-206	2597	2596	-60.66	3.14	0.00	1.55	2.59	2.59
P-207	2597	2525	60.66	26.65	0.00	1.55	2.59	2.59
P-208	2296	2507	33.16	0.04	0.00	0.21	0.03	0.03
P-209	2556	2557	-467.89	6.07	0.00	2.99	3.90	3.90
P-210	2307	2317	2.23	0.01	0.00	0.06	0.01	0.01
P-211	2045	2321	21.00	1.12	0.00	0.54	0.36	0.36
P-212	2283	2261	-31.16	0.25	0.00	0.20	0.03	0.03
P-213	2060	2471	0.00	0.00	0.00	0.00	0.00	0.00
P-214	2593	2296	33.16	0.01	0.00	0.21	0.03	0.03
P-215	2061	2471	0.00	0.00	0.00	0.00	0.00	0.00
P-216	2072	2687	20.33	0.15	0.00	0.23	0.05	0.05
P-217	2047	2049	-107.89	6.37	0.00	4.90	30.59	30.59
P-218	2179	J-774	2.00	144.48	0.00	0.36	0.55	0.55
P-219	2185	2155	0.00	0.00	0.00	0.00	0.00	0.00
P-220	2276	2317	-2.23	0.01	0.00	0.06	0.01	0.01
P-221	2075	2243	-245.56	27.43	0.00	1.57	1.18	1.18
P-222	2075	2077	2.00	4.79	0.00	0.82	4.00	4.00
P-223	2350	2351	-681.88	6.24	0.00	2.79	2.64	2.64
P-224	2078	2244	-241.56	14.51	0.00	1.54	1.15	1.15
P-225	2078	2080	2.00	31.47	0.00	0.82	4.00	4.00
P-226	2079	2248	-368.02	3.26	0.00	2.35	2.50	2.50
P-227	2079	2081	2.00	6.39	0.00	0.82	4.00	4.00
P-228	2131	2086	12.00	2.76	0.00	0.54	0.52	0.52
P-229	2083	2082	2.00	29.76	0.00	0.82	4.00	4.00
P-230	2083	2255	4.00	0.86	0.00	0.26	0.17	0.17
P-231	2319	2278	2.23	0.01	0.00	0.06	0.01	0.01
P-232	2084	2252	8.00	6.14	0.00	0.36	0.25	0.25
P-233	2084	2085	2.00	6.26	0.00	0.82	4.00	4.00
P-234	2086	2250	12.00	1.11	0.00	0.54	0.52	0.52
235	2351	2352	-683.88	14.67	0.00	2.79	2.66	2.66
-236	2087	2251	10.00	2.51	0.00	4.08	78.73	78.73
P-237	2088	2101	-252.28	6.89	0.00	1.61	1.24	1.24
P-238	2088	2091	2.00	19.53	0.00	0.82	4.00	4.00
P-239	2574	2111	10.00	4.57	0.00	0.65	0.91	0.91
P-240	2090	2092	2.00	6.21	0.00	0.82	4.00	4.00
P-241	2090	2096	2.00	4.89	0.00	0.82	4.00	4.00
P-242	2279	2278	-2.23	0.00	0.00	0.06	0.01	0.01

P-323	2162	2153	-218.48	3.31	0.00	0.89	0.32	0.32
P-324	J-847	2295	90.05	41.09	0.00	1.02	0.75	0.75
P-325	J-847	J-512	-75.95	0.58	0.00	0.86	0.55	0.55
P-326	J-761	J-847	14.10	0.46	0.00	0.16	0.02	0.02
P-327	J-761	J-734	10.64	0.01	0.00	0.12	0.01	0.01
P-328	J-531	J-149	-2.00	0.00	0.00	0.02	0.00	0.00
P-329	J-831	2218	6.00	4.71	0.00	0.61	1.05	1.05
330	2367	2379	-405.81	3.67	0.00	1.66	1.01	1.01
331	2539	2538	82.38	56.13	0.00	2.10	4.57	4.57
P-332	Pump-2	2211	12.00	17.65	0.00	0.78	1.27	1.27
P-333	J-871	2233	6.00	8.29	0.00	0.27	0.15	0.15
P-334	Pump-4	J-871	8.00	1.22	0.00	0.36	0.25	0.25
P-335	2173	J- 56	0.00	0.00	0.00	0.00	0.00	0.00
P-336	2173	2175	0.00	0.00	0.00	0.00	0.00	0.00
P-337	2174	2173	0.00	0.00	0.00	0.00	0.00	0.00
P-338	2174	2176	0.00	0.00	0.00	0.00	0.00	0.00
P-339	2176	2177	0.00	0.00	0.00	0.00	0.00	0.00
P-340	2176	2178	0.00	0.00	0.00	0.00	0.00	0.00
P-341	2344	2180	0.00	0.00	0.00	0.00	0.00	0.00
P-342	2277	2301	19.00	1.60	0.00	0.49	0.30	0.30
P-343	2380	2381	-405.81	6.32	0.00	1.66	1.01	1.01
P-344	2332	2065	0.00	0.00	0.00	0.00	0.00	0.00
P-345	2333	Pump-8	2.00	0.06	0.00	0.20	0.14	0.14
P-346	2329	2184	2.00	22.74	0.00	0.82	4.00	4.00
P-347	2342	2189	4.00	0.92	0.00	0.26	0.17	0.17
P-348	2189	2182	4.00	0.09	0.00	0.26	0.17	0.17
P-349	2182	2183	0.00	0.00	0.00	0.00	0.00	0.00
P-350	2182	2181	4.00	1.20	0.00	0.26	0.17	0.17
P-351	2181	2188	0.00	0.00	0.00	0.00	0.00	0.00
P-352	2181	2179	4.00	0.77	0.00	0.26	0.17	0.17
P-353	2301	2302	18.00	1.45	0.00	0.46	0.27	0.27
P-354	2324	2193	0.00	0.00	0.00	0.00	0.00	0.00
P-355	2382	2384	-409.81	4.73	0.00	1.67	1.03	1.03
P-356	2192	2196	4.00	155.96	0.00	1.63	14.43	14.43
P-357	2393	2192	4.00	6.86	0.00	1.63	14.43	14.43
P-358	2395	2194	2.00	24.73	0.00	0.82	4.00	4.00
P-359	2398	2198	4.00	123.65	0.00	1.63	14.43	14.43
P-360	2198	2197	2.00	63.69	0.00	0.82	4.00	4.00
P-361	2198	2200	2.00	6.30	0.00	0.82	4.00	4.00
362	2208	2417	24.00	1.24	0.00	0.61	0.47	0.47
363	2534	2232	4.00	91.21	0.00	1.63	14.43	14.43
P-364	2302	2303	17.00	0.82	0.00	0.43	0.25	0.25
P-365	2203	2068	52.00	19.62	0.00	1.33	1.95	1.95
P-366	2203	2204	4.00	25.56	0.00	1.63	14.43	14.43
P-367	2498	2499	-29.16	0.06	0.00	0.19	0.02	0.02
P-368	2325	2326	-413.81	16.36	0.00	1.69	1.05	1.05
P-369	2204	2205	2.00	2.50	0.00	0.82	4.00	4.00
P-370	2204	2207	2.00	27.68	0.00	0.82	4.00	4.00
P-371	2407	2206	2.00	23.19	0.00	0.82	4.00	4.00
P-372	2208	Pump-5	-26.00	2.16	0.00	0.66	0.54	0.54
P-373	2208	2210	2.00	0.27	0.00	0.05	0.00	0.00
P-374	2411	Pump-2	12.00	0.46	0.00	0.78	1.27	1.27
P-375	2303	2304	16.00	0.48	0.00	0.41	0.22	0.22
P-376	2211	2209	0.00	0.00	0.00	0.00	0.00	0.00
P-377	2211	J-754	10.00	45.25	0.00	4.08	78.73	78.73
P-378	2216	2213	2.00	4.12	0.00	0.82	4.00	4.00
P-379	2216	2219	2.00	7.07	0.00	0.82	4.00	4.00
P-380	2324	2325	-413.81	4.02	0.00	1.69	1.05	1.05
P-381	2218	2216	4.00	4.49	0.00	0.73	2.00	2.00
P-382	2218	2221	2.00	14.77	0.00	0.82	4.00	4.00
P-383	2221	2220	0.00	0.00	0.00	0.00	0.00	0.00
P-384	2221	2223	2.00	8.27	0.00	0.82	4.00	4.00
P-385	2426	2224	2.00	5.79	0.00	0.82	4.00	4.00
P-386	2585	2586	-450.39	18.80	0.00	2.87	3.64	3.64
P-387	2225	2412	52.00	10.28	0.00	1.33	1.95	1.95
P-388	2225	2226	0.00	0.00	0.00	0.00	0.00	0.00
P-389	2422	2229	2.00	138.20	0.00	0.82	4.00	4.00
P-390	2227	2066	56.00	1.69	0.00	1.43	2.24	2.24
P-391	2227	2217	2.00	197.33	0.00	0.82	4.00	4.00
P-392	2326	2327	-415.81	3.78	0.00	1.70	1.06	1.06
P-393	2217	2228	1.16	0.20	0.00	0.47	1.45	1.45
394	2217	2228	0.84	0.20	0.00	0.34	0.81	0.81
-395	2228	2231	2.00	48.74	0.00	0.82	4.00	4.00
P-396	2412	2230	2.00	49.44	0.00	0.82	4.00	4.00
P-397	2304	2305	15.00	0.48	0.00	0.38	0.20	0.20
P-398	2232	2201	2.00	7.20	0.00	0.82	4.00	4.00
P-399	2232	2234	2.00	159.71	0.00	0.82	4.00	4.00
P-400	2233	2215	4.00	0.67	0.00	0.18	0.07	0.07
P-401	2233	2235	2.00	105.63	0.00	0.36	0.55	0.55

P-481	2372	2374	-302.48	4.19	0.00	1.24	0.59	0.59
P-482	2375	2374	304.48	5.82	0.00	1.24	0.59	0.59
P-483	2376	2375	306.48	3.12	0.00	1.25	0.60	0.60
P-484	2377	2376	308.48	5.73	0.00	1.26	0.61	0.61
P-485	2378	2377	308.48	0.88	0.00	1.26	0.61	0.61
P-486	2407	2413	-8.00	0.44	0.00	0.20	0.06	0.06
P-487	2587	2588	-452.39	7.87	0.00	2.89	3.67	3.67
488	J-872	2074	2.00	77.58	0.00	0.36	0.55	0.55
489	2513	2518	-5.16	0.01	0.00	0.06	0.00	0.00
P-490	2501	2275	31.16	0.01	0.00	0.20	0.03	0.03
P-491	2453	2454	43.00	1.71	0.00	1.10	1.37	1.37
P-492	2493	2494	-23.16	0.07	0.00	0.15	0.01	0.01
P-493	2583	2584	-446.39	12.56	0.00	2.85	3.58	3.58
P-494	2586	2240	-452.39	19.91	0.00	2.89	3.67	3.67
P-495	2548	2549	-456.39	14.02	0.00	2.91	3.73	3.73
P-496	2549	2129	-456.39	4.70	0.00	2.91	3.73	3.73
P-497	2528	2214	18.55	2.04	0.00	0.47	0.29	0.29
P-498	2292	2123	-458.39	4.23	0.00	2.93	3.76	3.76
P-499	2552	2242	-463.89	12.39	0.00	2.96	3.84	3.84
P-500	2553	2554	-463.89	24.85	0.00	2.96	3.84	3.84
P-501	2554	2555	-465.89	2.22	0.00	2.97	3.87	3.87
P-502	2595	2523	542.43	6.11	0.00	3.46	5.13	5.13
P-503	2523	J-873	906.44	145.29	0.00	5.79	13.28	13.28
P-504	2359	2054	-697.88	20.58	0.00	2.85	2.76	2.76
P-505	Pump-7	J-872	2.00	20.40	0.00	0.36	0.55	0.55
P-506	2679	2076	0.00	0.00	0.00	0.00	0.00	0.00
P-507	2679	2680	-245.56	3.19	0.00	1.57	1.18	1.18
P-508	2502	2504	-33.16	0.11	0.00	0.21	0.03	0.03
P-509	2680	2678	-159.51	3.06	0.00	1.02	0.53	0.53
P-510	2680	J-390	-86.05	21.98	0.00	0.98	0.69	0.69
P-511	2683	2078	-239.56	23.69	0.00	1.53	1.13	1.13
P-512	2683	2684	-136.46	43.47	0.00	0.87	0.40	0.40
P-513	Pump-3	T- 1	-75.95	0.02	0.00	0.86	0.55	0.55
P-514	J-873	2599	906.44	1.99	0.00	5.79	13.28	13.28
P-519	2490	2491	-23.16	0.02	0.00	0.15	0.01	0.01
P-520	2687	2047	-107.89	2.74	0.00	1.22	1.05	1.05
P-522	2681	2472	226.08	74.49	0.00	1.44	1.01	1.01
P-523	2348	2681	226.08	10.57	0.00	1.44	1.01	1.01
P-524	2472	J-529	201.35	26.83	0.00	1.29	0.82	0.82
525	2458	2459	-37.01	58.59	0.00	1.68	4.22	4.22
-526	2561	2562	-483.63	20.77	0.00	3.09	4.15	4.15
P-527	2457	2458	-32.01	53.93	0.00	1.45	3.22	3.22
P-528	2456	2457	-30.01	35.28	0.00	1.36	2.86	2.86
P-529	2480	2462	-47.01	104.17	0.00	2.13	6.57	6.57
P-530	2463	2046	-49.01	14.61	0.00	2.22	7.10	7.10
P-531	2595	2590	-542.43	3.62	0.00	3.46	5.13	5.13
P-532	2451	2452	51.00	20.14	0.00	1.30	1.88	1.88
P-533	2565	2265	214.45	1.49	0.00	1.37	0.92	0.92
P-534	2573	2574	-231.28	10.94	0.00	1.48	1.06	1.06
P-535	2570	2569	222.45	10.39	0.00	1.42	0.98	0.98
P-536	2564	2562	492.63	13.98	0.00	3.14	4.29	4.29
P-537	2560	2561	-483.63	22.76	0.00	3.09	4.15	4.15
P-538	2452	2191	6.00	5.85	0.00	0.39	0.35	0.35
P-539	2114	2050	-504.63	0.34	0.00	3.22	4.49	4.49
P-540	2454	2437	41.00	15.46	0.00	1.05	1.26	1.26
P-541	2050	2051	-504.63	0.19	0.00	3.22	4.49	4.49
P-542	2046	2048	-49.01	1.29	0.00	2.22	7.10	7.10
P-543	2484	2495	-1.16	0.00	0.00	0.01	0.00	0.00
P-544	2558	2132	-440.39	5.42	0.00	2.81	3.49	3.49
P-545	2487	2488	-19.16	0.07	0.00	0.12	0.01	0.01
P-546	2488	2489	-21.16	0.07	0.00	0.14	0.01	0.01
P-547	2510	2511	92.23	0.50	0.00	0.59	0.19	0.19
P-548	2455	2465	-2.00	0.00	0.00	0.09	0.02	0.02
P-549	2465	2472	-4.00	0.41	0.00	0.18	0.07	0.07
P-550	2511	2512	92.23	0.31	0.00	0.59	0.19	0.19
P-551	2599	2058	270.28	0.05	0.00	1.10	0.48	0.48
P-552	2566	2565	214.45	4.88	0.00	1.37	0.92	0.92
P-553	2439	2440	37.00	11.13	0.00	0.94	1.04	1.04
P-554	2592	2593	-94.23	0.03	0.00	0.60	0.20	0.20
P-555	2506	2505	33.16	0.09	0.00	0.21	0.03	0.03
P-556	2504	2505	-33.16	0.12	0.00	0.21	0.03	0.03
557	2496	2497	-27.16	0.03	0.00	0.17	0.02	0.02
-558	2348	J- 57	-681.88	1.26	0.00	2.79	2.64	2.64
P-559	2253	2275	-31.16	0.10	0.00	0.20	0.03	0.03
P-560	2384	2324	-411.81	4.63	0.00	1.68	1.04	1.04
P-561	2384	2383	0.00	0.00	0.00	0.00	0.00	0.00
P-562	2327	2328	-417.81	0.20	0.00	1.71	1.07	1.07
P-646	J-149	J-710	50.48	1.33	0.00	0.57	0.26	0.26
P-699	J-520	J-703	50.48	4.63	0.00	0.57	0.26	0.26

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
2045		0.00	3108.57	2700.65	407.92	176.77
2046		0.00	2734.71	2632.51	102.20	44.29
2047		0.00	2511.43	2436.45	74.99	32.50
2048		----	2736.00	2656.56	79.44	34.43
2049		----	2517.80	2437.89	79.91	34.63
2050		0.00	2545.81	2468.50	77.31	33.50
2051		----	2546.00	2466.40	79.60	34.49
2052		----	2902.00	2822.21	79.79	34.58
2054		0.00	2901.03	2832.51	68.52	29.69
2055	CohagenPump	0.00	2704.99	2620.01	84.98	36.82
2057	HellCrkPump	0.00	2704.90	2624.96	79.94	34.64
2058		0.00	2657.70	2280.15	377.55	163.61
2060		0.00	2516.32	2429.39	86.93	37.67
2061		0.00	2516.32	2438.28	78.04	33.82
2062		0.00	2587.70	2365.35	222.35	96.35
2063		2.00	2697.75	2247.57	450.18	195.08
2064		0.00	2587.70	2361.12	226.58	98.18
2065		0.00	2798.90	2528.44	270.46	117.20
2066		0.00	3315.16	2874.47	440.69	190.96
2067		0.00	3298.57	3036.38	262.19	113.62
2068		0.00	3215.01	2914.50	300.51	130.22
2069		0.00	3208.92	2966.07	242.85	105.24
2070		0.00	3203.34	2934.71	268.63	116.41
2071		0.00	3195.82	3044.81	151.01	65.44
2072		0.00	2692.19	2433.43	258.77	112.13
2073		2.00	2576.83	2403.57	173.26	75.08
2074		2.00	2867.64	2552.13	315.52	136.72
2075		2.00	2648.05	2074.57	573.49	248.51
2076		0.00	2684.67	2035.95	648.72	281.11
2077		2.00	2643.26	2029.98	613.28	265.76
2078	CommunityHal	0.00	2623.66	2013.61	610.04	264.35
2079		0.00	2543.30	1986.97	556.33	241.08
2080		2.00	2592.18	2239.96	352.23	152.63
2081		2.00	2536.91	1981.95	554.96	240.48
2082		2.00	2609.09	2003.47	605.61	262.43
2083		0.00	2638.84	2015.51	623.33	270.11
2084		0.00	2649.09	2116.89	532.19	230.62
2085		2.00	2642.83	2116.40	526.43	228.12
2086		0.00	2654.89	2176.44	478.45	207.33
2087		0.00	2652.60	2149.54	503.07	218.00
2088		2.00	2627.97	2294.84	333.13	144.35
2089		2.00	2618.20	2375.62	242.58	105.12
2090		0.00	2527.94	2302.00	225.94	97.91
2091		0.00	2608.44	2343.96	264.48	114.61
2092		2.00	2521.72	2223.03	298.70	129.44
2093		0.00	2636.02	2493.47	142.56	61.77
2094		0.00	2574.09	2343.89	230.20	99.75
2096		2.00	2523.05	2227.46	295.59	128.09
2097		0.00	2574.09	2330.28	243.82	105.65
2098		2.00	2567.69	2368.20	199.48	86.44
2099		0.00	2557.96	2304.39	253.57	109.88
2100		0.00	2557.96	2322.47	235.49	102.05
2101		0.00	2634.86	2337.76	297.11	128.75
2102		0.00	2575.07	2416.07	159.00	68.90
2103		0.00	2575.07	2383.39	191.68	83.06
2104		0.00	2577.81	2363.68	214.14	92.79
2105		0.00	2564.96	2258.36	306.60	132.86
2106		2.00	2563.69	2205.38	358.31	155.27
2107		0.00	2564.96	2282.38	282.58	122.45
2108		0.00	2587.40	2359.08	228.31	98.94
2109		0.00	2788.25	2358.13	430.11	186.38
2110		0.00	2587.40	2320.30	267.09	115.74
2111		0.00	2590.57	2442.25	148.31	64.27
2112		2.00	2409.60	2397.53	12.07	5.23
2113		2.00	2370.79	2332.41	38.38	16.63
2114		2.00	3015.86	2472.67	543.20	235.39
2115		2.00	2968.58	2480.44	488.14	211.53
2116		2.00	2894.68	2432.97	461.71	200.07
2117		2.00	2981.98	2451.44	530.54	229.90
2119		0.00	2527.49	2268.47	259.03	112.24
2121		0.00	2630.83	2511.81	119.03	51.58
2123		0.00	2738.44	2479.46	258.98	112.23
2125		2.00	2906.82	2329.56	577.26	250.15
2126		0.00	2670.10	2588.22	81.89	35.48
2127		0.00	2670.10	2603.01	67.09	29.07

2219		2.00	3588.87	3188.71	400.17	173.41
2220		0.00	3585.67	3012.79	572.88	248.25
2221		0.00	3585.67	3061.25	524.42	227.25
2222		2.00	2727.16	2551.57	175.59	76.09
2223		2.00	3577.40	2959.38	618.02	267.81
2224		2.00	3240.31	2834.80	405.50	175.72
2225		0.00	3193.46	3037.40	156.07	67.63
2226		0.00	3193.46	3033.00	160.46	69.53
2227		0.00	3316.84	2884.51	432.34	187.35
2228		0.00	3119.31	2900.88	218.43	94.65
2229		2.00	3103.54	2529.42	574.12	248.79
2230		2.00	3133.74	2764.86	368.88	159.85
2231		2.00	3070.57	2313.28	757.29	328.16
2232		0.00	3244.31	3204.75	39.56	17.14
2233		0.00	2702.16	2347.30	354.86	153.77
2234		2.00	3084.60	2973.19	111.41	48.28
2235		2.00	2596.53	2228.54	367.99	159.46
2236		2.00	2891.55	2419.38	472.17	204.61
2237		0.00	3389.72	3309.77	79.95	34.65
2238		0.00	2769.68	2511.41	258.27	111.92
2239		2.00	3131.56	2898.71	232.84	100.90
2240		0.00	2636.02	2451.01	185.01	80.17
2241		4.00	2764.12	2707.38	56.75	24.59
2242		0.00	2788.25	2461.97	326.28	141.39
2243	FourCorners	0.00	2675.49	2106.46	569.03	246.58
2244		0.00	2638.16	2062.10	576.06	249.63
2245		2.00	2589.32	2036.87	552.45	239.39
2246		0.00	2574.39	1986.94	587.45	254.56
2247		2.00	2565.84	1982.94	582.90	252.59
2248		2.00	2546.56	1991.83	554.73	240.39
2249		2.00	2543.45	2015.32	528.13	228.86
2250		2.00	2653.79	2161.87	491.91	213.16
2251		0.00	2650.10	2146.68	503.42	218.15
2252		0.00	2642.95	2104.06	538.89	233.52
2253		0.00	2572.39	2451.73	120.66	52.29
2254		2.00	2639.79	2112.33	527.45	228.56
2255		0.00	2637.98	2019.84	618.14	267.86
2256		2.00	2636.49	2012.20	624.29	270.53
2257		0.00	2637.15	2236.12	401.03	173.78
2258		2.00	2636.91	2217.78	419.13	181.62
2259		2.00	2598.35	2127.03	471.32	204.24
2260		0.00	2649.35	2310.13	339.22	146.99
2261		0.00	2572.39	2451.73	120.66	52.29
2262		2.00	2506.47	2344.35	162.12	70.25
2263		2.00	2587.50	2336.02	251.48	108.98
2264		2.00	2992.60	2386.97	605.63	262.44
2265		0.00	2546.93	2431.69	115.24	49.94
2266		2.00	2941.86	2409.18	532.67	230.83
2267		2.00	2945.06	2406.33	538.74	233.45
2268		2.00	2642.66	2459.71	182.96	79.28
2269		0.00	2587.87	2379.19	208.68	90.43
2270		2.00	2587.76	2382.97	204.80	88.75
2271		0.00	2728.54	2595.99	132.55	57.44
2272		0.00	2675.74	2507.93	167.80	72.71
2273		2.00	2839.97	2761.94	78.04	33.82
2274		2.00	2808.27	2741.27	67.00	29.03
2275		0.00	2572.50	2440.09	132.41	57.38
2276		0.00	2779.07	2581.79	197.28	85.49
2277		0.00	3103.03	2917.28	185.75	80.49
2278		0.00	2779.05	2611.74	167.31	72.50
2279		0.00	2779.05	2621.32	157.73	68.35
2280		0.00	2779.03	2606.33	172.71	74.84
2281		0.00	2779.03	2593.89	185.14	80.23
2282		0.00	2572.13	2373.16	198.98	86.22
2283		0.00	2572.14	2376.70	195.44	84.69
2284		2.00	2644.43	2260.23	384.20	166.49
2285		0.00	2778.29	2501.90	276.39	119.77
2286		0.00	2587.69	2377.62	210.07	91.03
2288		0.00	2960.86	2918.30	42.56	18.44
2290		0.00	3254.30	2626.24	628.06	272.16
2291		0.00	2734.07	2549.27	184.80	80.08
2292		0.00	2734.21	2549.27	184.94	80.14
2293		0.00	3240.48	2719.42	521.06	225.79
2295		0.00	2762.66	2310.66	452.00	195.87
2296		0.00	2572.99	2490.61	82.38	35.70
2297		1.00	2779.16	2529.98	249.18	107.98
2298		1.00	3104.63	2895.11	209.52	90.79
2299		0.00	3104.19	2869.12	235.07	101.86
2300		0.00	3103.82	2884.74	219.09	94.94

2380		0.00	2738.19	2671.84	66.34	28.75
2381		2.00	2744.50	2661.84	82.67	35.82
2382		0.00	2746.07	2684.08	61.98	26.86
2383		0.00	2750.80	2565.58	185.22	80.26
2384		2.00	2750.80	2530.44	220.36	95.49
2385		0.00	3217.75	2724.90	492.86	213.57
2386		0.00	3232.76	2718.01	514.75	223.06
2387		0.00	3241.28	2593.43	647.85	280.73
2388		0.00	3241.39	2601.70	639.69	277.20
2389		0.00	3242.15	2619.15	622.99	269.96
2390		0.00	3242.84	2637.26	605.57	262.41
2391		0.00	3243.50	2659.84	583.66	252.92
2392		0.00	3247.35	2773.85	473.50	205.18
2393		2.00	3217.75	2753.34	464.41	201.25
2394		0.00	3217.95	2768.27	449.68	194.86
2395		4.00	3218.27	2766.00	452.26	195.98
2396		0.00	3220.15	2898.68	321.47	139.30
2397		0.00	3221.01	2957.47	263.54	114.20
2398		4.00	3221.62	3000.88	220.74	95.66
2399		0.00	3224.11	2987.92	236.19	102.35
2400		2.00	3230.66	2753.54	477.12	206.75
2401		0.00	2706.99	2627.65	79.34	34.38
2402		0.00	2707.34	2624.40	82.93	35.94
2403	WellCapacity	250.00	2706.38	2606.69	99.69	43.20
2404		0.00	2706.38	2574.86	131.51	56.99
2405		0.00	2706.38	2621.84	84.53	36.63
2406		0.00	3252.03	2632.38	619.66	268.52
2407		6.00	3235.13	2882.28	352.85	152.90
2408		2.00	3172.62	2952.13	220.50	95.55
2409		2.00	3174.45	3005.67	168.78	73.14
2410		2.00	3178.06	3042.38	135.67	58.79
2411		4.00	3179.30	2976.01	203.29	88.09
2412	BrusettChurc	2.00	3183.18	3013.67	169.50	73.45
2413		2.00	3235.57	2997.80	237.77	103.03
2414		10.00	3236.11	3193.66	42.45	18.39
2415		2.00	3239.31	3142.05	97.26	42.15
2416		0.00	3239.97	3118.76	121.21	52.52
2417		2.00	3242.87	3111.90	130.97	56.75
2419		0.00	3171.86	2994.58	177.28	76.82
2420		0.00	3171.95	2992.58	179.38	77.73
2421		2.00	2795.17	2248.22	546.95	237.01
2422		4.00	3241.74	2827.45	414.29	179.53
2423		2.00	3243.15	2798.39	444.76	192.73
2424		0.00	3243.57	2811.12	432.45	187.40
2425		2.00	3251.49	2661.94	589.56	255.47
2426		2.00	3246.10	2833.85	412.25	178.64
2427		2.00	3247.40	2841.53	405.88	175.88
2428		2.00	3248.35	2766.00	482.34	209.02
2429		2.00	3252.71	2646.25	606.46	262.80
2430		2.00	2795.17	2259.25	535.93	232.24
2431		2.00	2795.21	2283.95	511.26	221.55
2432		4.00	2795.25	2334.28	460.97	199.75
2433		0.00	3240.81	2714.50	526.32	228.07
2434		6.00	3241.10	2950.19	290.91	126.06
2435		0.00	3241.57	2876.24	365.33	158.31
2436		2.00	2747.04	2419.42	327.63	141.97
2437		0.00	2622.80	2413.28	209.52	90.79
2438		4.00	2618.09	2389.40	228.69	99.10
2439		0.00	2612.64	2408.39	204.25	88.51
2440		4.00	2601.51	2393.01	208.50	90.35
2441		0.00	2595.03	2459.18	135.85	58.87
2442		4.00	2588.39	2424.57	163.82	70.99
2443		2.00	2587.75	2382.67	205.07	88.87
2444		2.00	2714.49	2425.72	288.77	125.14
2445		4.00	2695.53	2410.92	284.61	123.33
2446		0.00	2587.70	2362.23	225.47	97.70
2447		15.00	2587.69	2386.18	201.51	87.32
2448		0.00	2691.60	2368.99	322.61	139.80
2449		0.00	2691.44	2355.24	336.19	145.68
2450		0.00	2681.26	2365.48	315.78	136.84
2451		2.00	2669.53	2498.49	171.05	74.12
2452		2.00	2649.39	2399.80	249.59	108.16
2453		0.00	2639.97	2366.07	273.90	118.69
2454		2.00	2638.26	2394.94	243.31	105.44
2455		2.00	2829.91	2275.78	554.12	240.12
2456		4.00	2805.15	2517.65	287.50	124.58
2457		2.00	2840.42	2519.32	321.11	139.15
2458		5.00	2894.35	2763.25	131.10	56.81
2459		2.00	2952.94	2615.58	337.37	146.19

2540		2.00	3335 75	3116.92	218 83	94.83
2541		4 00	3336.25	3067 09	269.16	116.64
2542		2 00	3337.21	3009 61	327.60	141 96
2543		6.00	3349 76	3025.78	323 98	140.39
2544		2 00	3356.32	2940.84	415 48	180.04
2545		4 00	3379.67	2978 50	401.16	173 84
2546		2 00	3396 15	3048 58	347 56	150 61
2547		2.00	2517 64	2437.92	79 72	34.54
2548		2 00	2695.63	2594.55	101 08	43.80
2549		0 00	2709.65	2473 22	236.42	102 45
2550		2.00	2732 80	2565 81	166.99	72 36
2551		0.00	2756 87	2498.75	258 13	111 85
2552		2 00	2775.86	2497.04	278 81	120.82
2553		0.00	2811.73	2394.61	417.12	180.75
2554		2.00	2836 58	2518 76	317.82	137 72
2555		0.00	2838.81	2517 15	321 65	139 38
2556		2 00	2881.75	2360.82	520 92	225 73
2557		0.00	2887 82	2380 61	507.21	219.79
2558		5 00	2517 95	2431 13	86.82	37.62
2559		2 00	2928.95	2374 80	554 16	240 13
2560		5.00	2949.84	2446.55	503 29	218.09
2561		0.00	2972 60	2542.58	430.02	186.34
2562		5.00	2993.36	2442 48	550.88	238.72
2564		0 00	3007.35	2410 66	596 69	258 57
2565		0.00	2548.42	2406 39	142 03	61 55
2566		2.00	2553 30	2356.88	196 41	85 11
2569		2.00	2560 75	2309.67	251.08	108 80
2570		4 00	2571.14	2396.06	175.08	75.87
2573		4 00	2584.19	2456 62	127.57	55.28
2574		5.00	2595 14	2364 53	230 61	99 93
2577		0 00	2643.83	2229.56	414.28	179 52
2578		2 00	2647.63	2303.14	344.49	149.28
2579		2.00	2549.92	2415 55	134.37	58.23
2580		2.00	2652 54	2258 85	393 69	170.60
2583		0 00	2576 89	2416.96	159 93	69 30
2584		4 00	2589.44	2458.20	131.25	56 87
2585		0.00	2597.31	2517.58	79.73	34 55
2586		2.00	2616.11	2398 49	217.62	94.30
2587		0 00	2666 89	2478.57	188 32	81 61
2588		2 00	2674.77	2440.19	234.58	101 65
2590		----	1975.00	1967.45	7.55	3 27
2591		0.00	2948 96	2869 02	79 93	34.64
2592		0 00	2782 91	2505.44	277 47	120.24
2593		----	2573.00	2493.40	79 60	34.49
2594	ManiageSprin	0.00	3240.35	2714.63	525.72	227 81
2595		0 00	2518 40	2021 52	496.88	215 32
2596		----	2945 00	2865 81	79.19	34.32
2597		0.00	2941.86	2865 81	76 06	32.96
2598	SteveForks	----	2949.00	2869.02	79 98	34.66
2599	p-514	----	2365.00	2282.90	82 10	35.58
2675		0.00	3319.75	2869.02	450.72	195.31
2677		0 00	2732 25	2560.03	172 21	74 63
2678		0 00	2690 93	2375 29	315.64	136 78
2679		0.00	2684 67	2220 63	464.04	201 08
2680		0.00	2687.87	2275.49	412 38	178.70
2681		0.00	2904.82	2513.25	391 57	169.68
2682		2 00	2648 34	2423.16	225 18	97.58
2683		0 00	2599 97	2033 30	566.67	245 56
2684		0.00	2643.44	2591 04	52.40	22 71
2685		0.00	2652.48	2430 01	222.46	96.40
2686		0 00	2675.74	2600.65	75 09	32.54
2687		0 00	2692 04	2416.99	275.05	119.19
2688		0.00	2690 24	2540 97	149.27	64.68
2694		----	2779.00	2699 24	79.76	34 56
J- 8		0 00	2780.11	2361.00	419 11	181 61
J- 32		0 00	3252 46	2619.88	632 58	274.12
J- 56		0.00	2916 64	2824 53	92 11	39.91
J- 57		0.00	2916.64	2463 51	453.13	196 36
J-149		0 00	2780.04	2361 00	419.04	181 58
J-155		0.00	2813 84	2820.00	-6 16	-2.67
J-159		0.00	2803 49	2383 00	420 49	182.21
-224		0.00	3252.51	2620 01	632.50	274.08
J-390		0 00	2709.85	2072 40	637.45	276 23
J-492		2 00	3162 13	2885.30	276 83	119.96
J-494		0.00	2713.80	2093 17	620 63	268.94
J-512		0.00	2804.33	2560 00	244.33	105 88
J-514		2 00	2780.02	2300.00	480.02	208 01
J-520		0.00	2776 76	2420.00	356 76	154.60
J-521		0.00	2770.01	2755.00	15 01	6.50

2387	280.73	2112	5.23
2388	277.20	J-521	6.50
J-390	276.23	J-709	13.26
J- 32	274.12	2113	16.63
2055	274.09	2232	17.14
J-224	274.08	2140	18.34
2057	272.75	2414	18.39

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
2594	PRV-1	35.00	ACTIVATED	227.81	35.00	10.00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

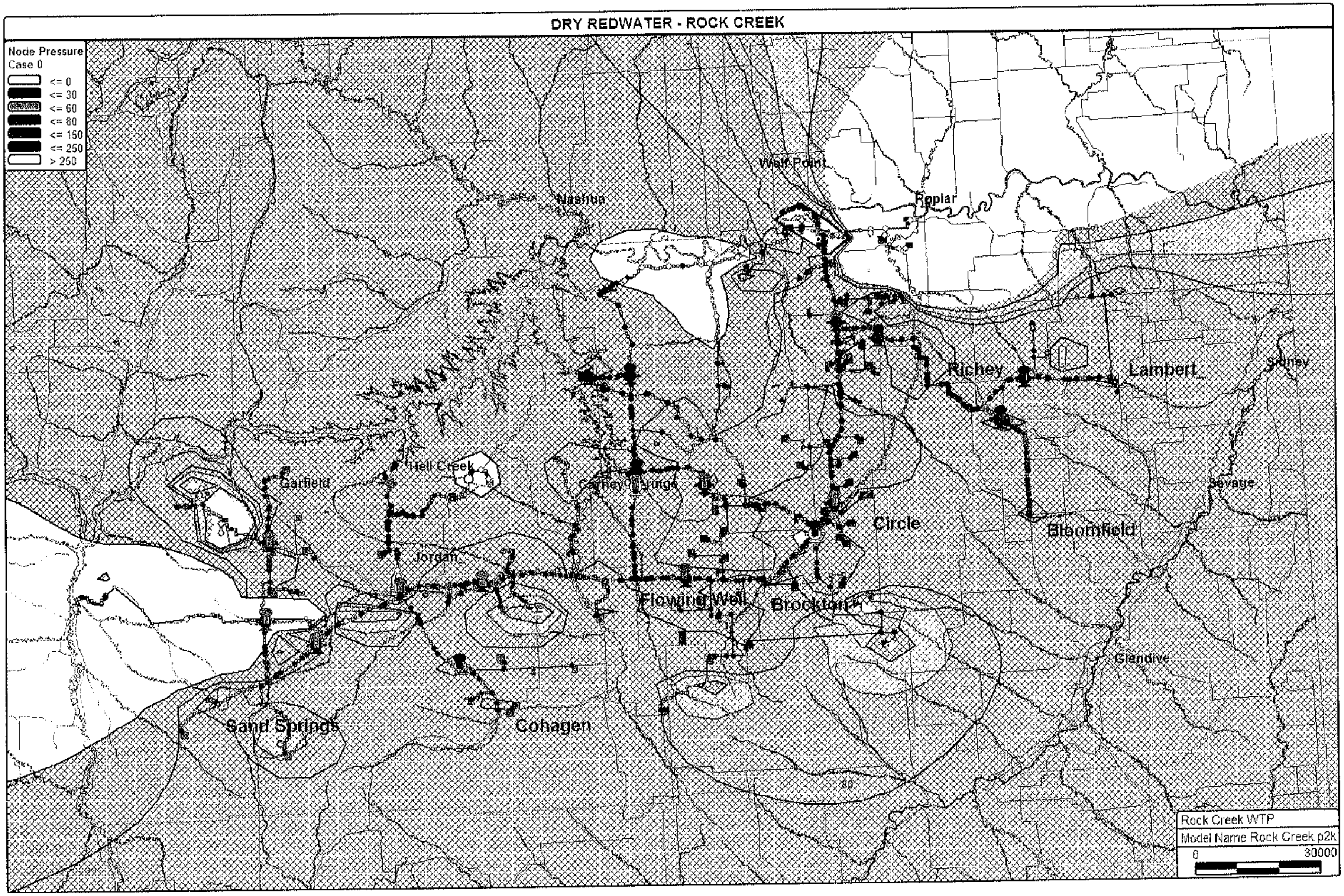
NODE NAME	FLOWRATE (gpm)	NODE TITLE
2048	79.34	
2049	291.98	
2051	290.19	
2052	479.40	
2482	-7.42	
2590	542.43	
2593	127.39	
2596	16.83	
2598	18.79	SteveForks
2599	-636.16	p-514
2694	19.77	
J- 1	25.47	

NET SYSTEM INFLOW = 1891.58
NET SYSTEM OUTFLOW = -643.58
NET SYSTEM DEMAND = 1248.00

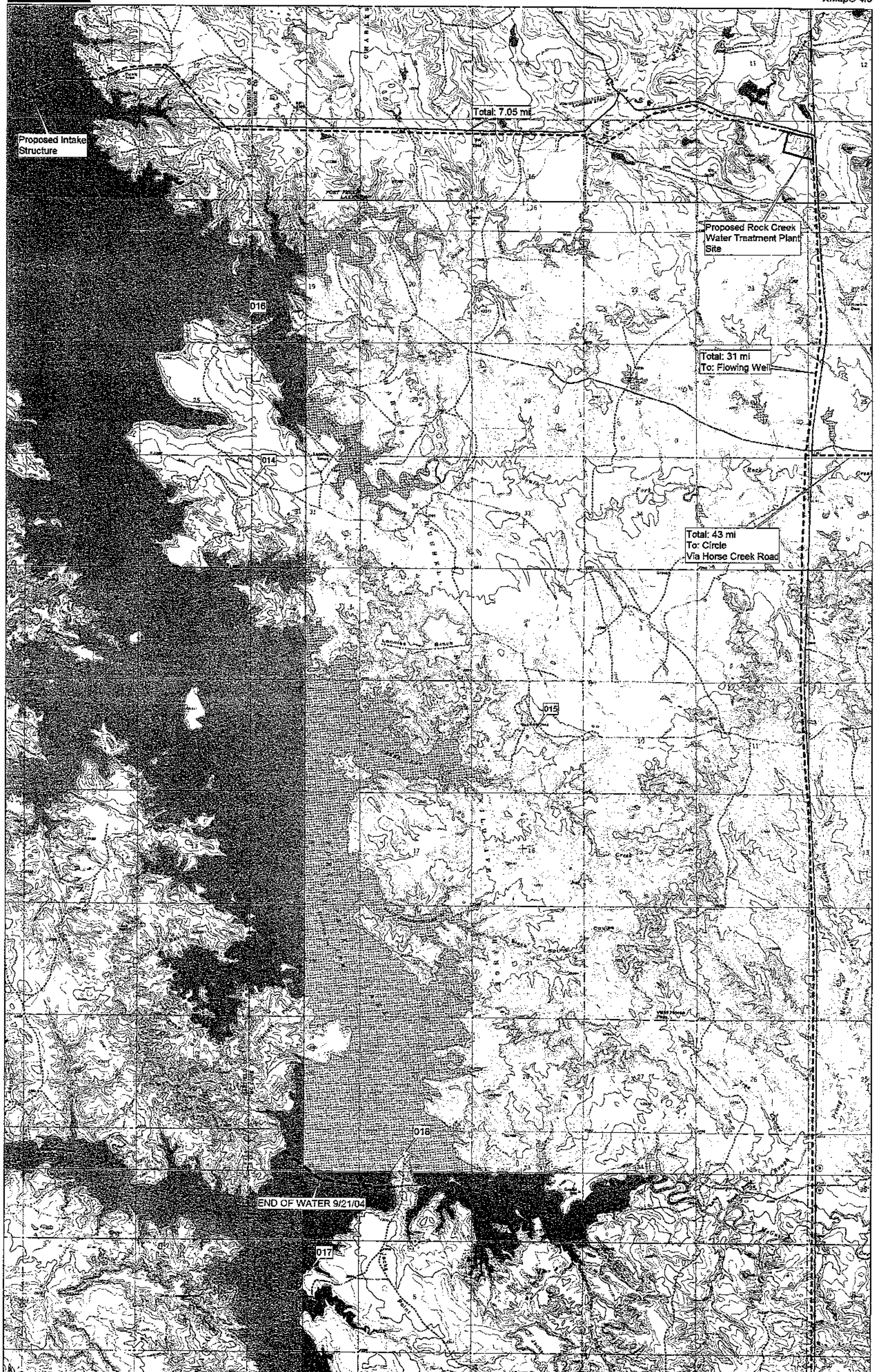
***** HYDRAULIC ANALYSIS COMPLETED *****

Big Dry Arm Model

(Nelson, Rock or Bear Creek)



DRY REDWATER - ROCK CREEK
Node Pressure
Case 0
<= 0
<= 30
<= 60
<= 80
<= 150
<= 250
> 250
Wolf Point
Poplar
Nashua
Richey
Lambert
Sidney
Hell Creek
Garfield
Circle
Bloomfield
Savage
Jordan
Flowing Well
Brockton
Glendive
Sand Springs
Cohagen
80
Rock Creek WTP
Model Name Rock Creek.p2k
0
30000



Scale 1 : 50,000

1" = 4,166.7 ft   Data Zoom 13-0

DRY REDWATER - ROCK CREEK WTP - PRELIMINARY COST ESTIMATE

Description	Quantity	Unit	Unit Price	Total Price
3" PVC Class 100	0	LF	$ 7.53	$ -
4" PVC Class 100	59,867	LF	$ 7.74	$ 463,400.00
5" PVC Class 100	0	LF	$ 8.33	$ -
6" PVC Class 100	10,209	LF	$ 9.03	$ 92,200.00
8" PVC Class 100	18,651	LF	$ 10.50	$ 195,800.00
10" PVC Class 100	58,254	LF	$ 12.33	$ 718,300.00
12" PVC Class 100	0	LF	$ 14.73	$ -
2"PVC Class 160	47,355	LF	$ 7.44	$ 352,300.00
2.5" PVC Class 160	277,059	LF	$ 7.51	$ 2,080,700.00
3" PVC Class 160	45,577	LF	$ 7.65	$ 348,700.00
4" PVC Class 160	694,509	LF	$ 8.04	$ 5,583,900.00
5" PVC Class 160	15,457	LF	$ 8.67	$ 134,000.00
6" PVC Class 160	511,751	LF	$ 9.24	$ 4,728,600.00
8" PVC Class 160	430,552	LF	$ 10.79	$ 4,645,700.00
10" PVC Class 160	291,510	LF	$ 12.88	$ 3,754,600.00
12" PVC Class 160	103,216	LF	$ 15.09	$ 1,557,500.00
2"PVC Class 200	62,833	LF	$ 7.41	$ 465,600.00
2.5"PVC Class 200	21,553	LF	$ 7.60	$ 163,800.00
3" PVC Class 200	26,948	LF	$ 7.78	$ 209,700.00
4" PVC Class 200	97,328	LF	$ 8.00	$ 778,600.00
5" PVC Class 200	44,403	LF	$ 9.05	$ 401,800.00
6" PVC Class 200	99,002	LF	$ 9.72	$ 962,300.00
8" PVC Class 200	78,125	LF	$ 11.60	$ 906,300.00
10" PVC Class 200	12,425	LF	$ 18.37	$ 228,200.00
12" PVC Class 200	48,564	LF	$ 20.12	$ 977,100.00
1"PVC Class 250	1,708,826	LF	$ 4.00	$ 6,835,300.00
1.5"PVC Class 250	204,344	LF	$ 7.40	$ 1,512,100.00
2"PVC Class 250	145,426	LF	$ 7.45	$ 1,083,400.00
2.5"PVC Class 250	60,348	LF	$ 7.65	$ 461,700.00
3" PVC Class 250	15,083	LF	$ 7.98	$ 120,400.00
4" PVC Class 250	78,139	LF	$ 8.62	$ 673,600.00
5" PVC Class 250	13,301	LF	$ 9.45	$ 125,700.00
6" PVC Class 250	51,412	LF	$ 10.51	$ 540,300.00
8" PVC Class 250	73,716	LF	$ 12.97	$ 956,100.00
10" PVC Class 250	0	LF	$ 16.31	$ -
12" PVC Class 250	44,622	LF	$ 23.03	$ 1,027,600.00
Storage Tanks In Line (20,000 Gal ave)	18	EA	$ 45,000.00	$ 810,000.00
WTP Storage Tank (1,000,000 Gal)	1	EA	$ 1,000,000.00	$ 1,000,000.00
Pump Stations (29)	29	EA	$ 35,000.00	$ 1,015,000.00
Regulator Stations	6	EA	$ 6,000.00	$ 36,000.00
Mobilization	1	L.S.	$ 150,000.00	$ 150,000.00
Aggregrate Surfaces	1400	C.Y.	$ 20.00	$ 28,000.00
Unclassified Excavation	104,000	C.Y.	$ 2.00	$ 208,000.00
12" Inlet Piping	1080	L.F.	$ 27.00	$ 29,200.00
12" Gate Valve & Box	2	Each	$ 2,100.00	$ 4,200.00
Inlet Splash Pad	2	Each	$ 700.00	$ 1,400.00
Hydroburst System	1	Each	$ 22,500.00	$ 22,500.00
Intake Screens	2	Each	$ 7,500.00	$ 15,000.00
Intake Piping / Valves	1	L.S.	$ 50,000.00	$ 50,000.00

Coffer Dam	1	L.S.	$	7,000.00	$	7,000.00
Erosion Pads	2	Each	$	5,000.00	$	10,000.00
Riprap	330	C.Y.	$	30.00	$	9,900.00
Intake Sump	1	L.S.	$	30,000.00	$	30,000.00
Intake Building	1	L.S.	$	22,000.00	$	22,000.00
Sedimentations Pond Liner	196,000	S.F.	$	0.85	$	166,600.00
12" Outlet Piping	600	L.F.	$	25.00	$	15,000.00
12" Gate Valve & Box	2	Each	$	1,900.00	$	3,800.00
Transfer Sump	1	Each	$	25,000.00	$	25,000.00
Transfer Building	1	Each	$	15,000.00	$	15,000.00
Backwash Piping	650	L.F.	$	18.00	$	11,700.00
Backwash Overflow	1	L.S.	$	1,800.00	$	1,800.00
Backwash Outlet	1	L.S.	$	3,000.00	$	3,000.00
Pre- Engineered Building	1	L.S.	$	110,000.00	$	110,000.00
WTP - Building - General	1	L.S.	$	135,000.00	$	135,000.00
WTP - Building - Electrical	1	L.S.	$	125,000.00	$	125,000.00
WTP - Building - Mechanical	1	L.S.	$	50,000.00	$	50,000.00
Furnish Water Treatment Equipment	1	L.S.	$	675,000.00	$	675,000.00
Install Water Treatment Equipment	1	L.S.	$	125,000.00	$	125,000.00
Furnish & Install Chemical Feed Equipment	1	L.S.	$	150,000.00	$	150,000.00
Process Piping and Valves	1	L.S.	$	85,000.00	$	85,000.00
Intake Pumps	1	L.S.	$	25,000.00	$	25,000.00
Transfer Pumps	1	L.S.	$	25,000.00	$	25,000.00
Control System	1	L.S.	$	175,000.00	$	175,000.00
Electrical Service to Site	1	L.S.	$	47,500.00	$	47,500.00
Electrical Service on Site	1	L.S.	$	5,000.00	$	5,000.00
Septic Tank / Drainfield	1	L.S.	$	4,000.00	$	4,000.00
Laboratory Equipment	1	L.S.	$	8,500.00	$	8,500.00
Seeding	12	Acres	$	1,500.00	$	18,000.00
Fencing	5000	L.F.	$	5.00	$	25,000.00
Testing Laboratory Services	1	L.S.	$	7,000.00	$	7,000.00
Chemical Allowance	1	L.S.	$	5,000.00	$	5,000.00
Pilot Studies	1	L.S.	$	75,000.00	$	75,000.00
		Total Estimated Bid			$	48,650,400.00
		Contingency			$	4,865,000.00
		Total Estimated Construction			$	53,515,400.00
		Engineering Design			$	4,378,500.00
		Engineering Con. Admin			$	3,405,500.00
		Legal/administartion			$	535,200.00
		Estimated Project			$	61,834,600.00

Pipe2000 [Rock Creek]

File Edit View Analyze Move Labels Facilities Management Tools Help

KYPipe: GPM Eq: HW Table Index # Node:2749

Map | Map Settings | System Data | Other Data | Setup/Defaults Report

Print | Clear | Font | Load/Swap | Customize | All

```
PUMP/LOSS ELEMENT DATA

THERE IS A PUMP AT NODE  BlmfldBstr; USEFUL POWER =    2.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  BPPump-10; USEFUL POWER =     0.10 (Efficiency =   0.75%)
THERE IS A PUMP AT NODE  BPPump-10_; USEFUL POWER =    0.25 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE   BPPump-7; USEFUL POWER =     0.10 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  BrsetBstr1; USEFUL POWER =    2.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  BrsetBstr2; USEFUL POWER =    1.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  CarneySBSt; USEFUL POWER =  150.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  CirJdnBstr; USEFUL POWER =   25.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  CohagenBst; USEFUL POWER =    0.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  FloWelBstr; USEFUL POWER =   75.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  HelCrkBStr; USEFUL POWER =    5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  HrseCrkBst; USEFUL POWER =   35.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  HrseCrkBst; USEFUL POWER =   25.00 (Efficiency =  75.00%)
```

X: 834794.92 Y: 488998.958 D: 199556.701 Analyze P Flow N Pres A Case 0 B Case 0

Pipe2000 [Rock Creek]

File Edit View Analyze Move Labels Facilities Management Tools Help

KYPipe: GPM Eq: HW Table Index # Node:2749

Map | Map Settings | System Data | Other Data | Setup/Defaults Report

Print | Clear | Font | Load/Swap | Customize | All

```
THERE IS A PUMP AT NODE  LmbrtBstr; USEFUL POWER =     2.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-1; USEFUL POWER =     1.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-2; USEFUL POWER =     2.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-3; USEFUL POWER =     5.00 (Efficiency =   0.75%)
THERE IS A PUMP AT NODE     Pump-4; USEFUL POWER =     0.25 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-5; USEFUL POWER =     0.30 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-6; USEFUL POWER =     0.10 (Efficiency =   1.00%)
THERE IS A PUMP AT NODE     Pump-7; USEFUL POWER =     0.20 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-8; USEFUL POWER =     0.10 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     Pump-9; USEFUL POWER =     5.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  RchLmbBst1; USEFUL POWER =   60.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  RchLmbBst2; USEFUL POWER =    7.50 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  SndSprBstr; USEFUL POWER =    3.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE  WolfitBstr; USEFUL POWER =   15.00 (Efficiency =  75.00%)
THERE IS A PUMP AT NODE     WTP-HS; USEFUL POWER =  175.00 (Efficiency =  75.00%)
```

X: 834794.92 Y: 488998.958 D: 199556.701 Analyze P Flow N Pres A Case 0 B Case 0

Inventory/Cost Summary

Pipe Type	Number	Total Length	Cost/Unit	Total Cost
VC - 100 - 4	5	59867	7.74	463367.54
PVC - 100 - 6	3	10209	9.03	92190.62
PVC - 100 - 8	7	18651	11.33	211310.91
PVC - 100 - 10	12	58254	13.53	788172.35
PVC - 160 - 2	6	47355	7.44	352323.28
PVC - 160 - 2.5	15	277059	7.51	2080713.79
PVC - 160 - 3	9	45577	7.65	348664.43
PVC - 160 - 4	115	694509	8.04	5583848.77
PVC - 160 - 5	2	15457	8.67	134008.61
PVC - 160 - 6	53	511751	9.24	4728574.93
PVC - 160 - 8	114	430552	10.79	4645659.61
PVC - 160 - 10	75	291510	12.88	3754644.96
PVC - 160 - 12	42	103216	15.09	1557530.51
PVC - 200 - 2	4	62833	7.41	465591.94
PVC - 200 - 2.5	9	21553	7.60	163803.52
PVC - 200 - 3	3	26948	7.78	209657.79
PVC - 200 - 4	21	97328	8.00	778627.64
PVC - 200 - 5	17	44403	9.05	401847.64
PVC - 200 - 6	8	99002	9.72	962299.52
PVC - 200 - 8	22	78125	11.60	906253.47
PVC - 200 - 10	8	12425	18.37	228244.64
PVC - 200 - 12	11	48564	23.03	1118426.05
PVC - 250 - 1	174	1708826	4.00	6835304.10
PVC - 250 - 1.5	3	204344	7.40	1512145.49
PVC - 250 - 2	11	145426	7.45	1083424.20
PVC - 250 - 2.5	22	60348	7.65	461665.52
PVC - 250 - 3	5	15083	7.98	120366.30
PVC - 250 - 4	20	78139	8.62	673554.74
PVC - 250 - 5	2	13301	9.45	125689.79
PVC - 250 - 6	7	51412	10.51	540338.67
PVC - 250 - 8	13	73716	12.97	956096.74
PVC - 250 - 12	8	44622	20.12	897804.06
Total	826	5450365	7.92	43182152.08

No fittings specified in system

Device Summary

760 junction nodes
18 tanks
1 resevervoirs
29 pumps
6 regulators
1896 intermediate nodes

```
* * * * * * * * * *  K Y P I P E 4  * * * * * * * * * *
*                                                      *
*    University of Kentucky Network Modeling Software  *
*                                                      *
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*            Version 2.000 - 04/24/2003                *
*                                                      *
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```

Date & Time: Sat Oct 23 11:24:37 2004

INPUT DATA FILENAME -------------- C:\PIPE20~1\DRWLAP~1\Models\Rock_Cre.DI2
TABULATED OUTPUT FILENAME -------- C:\PIPE20~1\DRWLAP~1\Models\Rock_Cre.OT2
POSTPROCESSOR RESULTS FILENAME --- C:\PIPE20~1\DRWLAP~1\Models\Rock_Cre.RS2

****

S U M M A R Y   O F   O R I G I N A L   D A T A

****

U N I T S   S P E C I F I E D

FLOWRATE .... = gallons/minute
HEAD (HGL) .... = feet
PRESSURE .... = psig

R E G U L A T I N G   V A L V E   D A T A

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
RV-1	PRV-1	2830.77
RV-2	PRV-1	2296.73
RV-3	PRV-1	2127.23
RV-4	PRV-1	2522.23

P I P E L I N E   D A T A

STATUS CODE: XX -CLOSED PIPE   CV -CHECK VALVE

P I P E N A M E	NODE NAMES #1	#2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
P- 1	JN-19	2146	810.05	1.00	140.0000	0.00
P- 2	JL-10	JL-11	3764.95	4.00	140.0000	0.00
P- 3	JW-13	JW-14	4982.44	8.00	140.0000	0.00
P- 4	JR-19	JR-20	7906.34	8.00	140.0000	0.00
P- 5	JR-22	JR-23	2581.15	8.00	140.0000	0.00
P- 6	JR-23	JR-24	2043.30	8.00	140.0000	0.00
P- 7	JS-14	J- 44	2088.64	4.00	140.0000	0.00
P- 8	JR-28	JR-29	3510.42	8.00	140.0000	0.00
P- 9	JR-28	J- 71	641.27	8.00	140.0000	0.00
P- 10	J-292	JW-6	7539.97	8.00	140.0000	0.00
P- 11	JC-52	J-124	4385.01	10.00	140.0000	0.00
P- 12	JC45A	JC-46	2769.19	10.00	140.0000	0.00
P- 13	JBL-27	JBL-28	2256.71	4.00	140.0000	0.00
P- 14	JW-7	JW-8	5170.08	8.00	140.0000	0.00
P- 15	JR-29	JR-30	3752.67	8.00	140.0000	0.00
P- 16	JL-6	JL-7	10699.82	4.00	140.0000	0.00
P- 17	JL-9	JL-10	12289.22	4.00	140.0000	0.00
P- 18	JL-12	JL-13	10705.72	4.00	140.0000	0.00
P- 19	JL-13	JL-14	7679.86	4.00	140.0000	0.00
P- 20	JL-14	JL-15	7916.34	4.00	140.0000	0.00
P- 21	JL-16	JL-35	5807.37	8.00	140.0000	0.00
P- 22	JD-1Ann	J- 85	5267.54	8.00	140.0000	0.00
P- 23	JS-6	JS-5	9280.84	4.00	140.0000	0.00
P- 24	JH-1	JH-2	2912.63	3.00	140.0000	0.00
P- 25	JS-7	JS-6	3801.13	4.00	140.0000	0.00
P- 26	JS-10	JS-9	2250.13	4.00	140.0000	0.00
P- 27	JS-21	JS-20	2181.14	4.00	140.0000	0.00

P- 28	J- 87	J-422	1603.08	8.00	140.0000	0.00
P- 29	J-123	JW-2	1227.49	8.00	140.0000	0.00
P- 30	JW-1	JW-2	564.07	8.00	140.0000	0.00
P- 31	JC-54A	J-101	1074.19	10.00	140.0000	0.00
P- 32	J- 21	JW-40	3910.61	8.00	140.0000	0.00
P- 33	R- 1	@-Intake	1042.99	12.00	140.0000	0.00
P- 34	J- 2	JW-44	139.07	12.00	140.0000	0.00
35	JD-1	JD-1Ann	827.87	10.00	140.0000	0.00
- 36	JR-21	JR-22	1278.08	8.00	140.0000	0.00
P- 37	J- 44	J- 89	1807.11	4.00	140.0000	0.00
P- 38	JC-33	JC-34	2358.62	10.00	140.0000	0.00
P- 39	JC-34	J- 47	1520.84	10.00	140.0000	0.00
P- 40	JC-35	JC-36	8727.58	10.00	140.0000	0.00
P- 41	JC-38	JC-39	3149.97	10.00	140.0000	0.00
P- 42	JC-39	J-216	7982.84	10.00	140.0000	0.00
P- 43	JC-1	JC-2	2633.64	10.00	140.0000	0.00
P- 44	JC-2	JC-3	8173.63	10.00	140.0000	0.00
P- 45	J-278	J-281	40.33	10.00	140.0000	0.00
P- 46	JD-1Ann	JC-1	3207.80	10.00	140.0000	0.00
P- 47	JC-5	JC-6	3624.32	10.00	140.0000	0.00
P- 48	JC-7	JC-7A	6246.38	10.00	140.0000	0.00
P- 49	JC-8	JC-9	4595.95	10.00	140.0000	0.00
P- 50	JC-11	J-408	984.25	10.00	140.0000	0.00
P- 51	JC-10	JC-11	3829.90	10.00	140.0000	0.00
P- 52	JC-12	JC-13	3570.55	10.00	140.0000	0.00
P- 53	JC-15	JC-16	5880.14	10.00	140.0000	0.00
P- 54	JC-16	JC-17	2147.36	10.00	140.0000	0.00
P- 55	JC-17	JC-18	6244.33	10.00	140.0000	0.00
P- 56	JC-18	JC-19	2217.34	10.00	140.0000	0.00
P- 57	JC-6	J-210	1124.68	10.00	140.0000	0.00
P- 58	JC-19	JC-20	579.29	10.00	140.0000	0.00
P- 59	JC-21	JC-22	8337.54	10.00	140.0000	0.00
P- 60	JC-22	JC-23	9382.47	10.00	140.0000	0.00
P- 61	JC-23	JC-24	1199.10	10.00	140.0000	0.00
P- 62	JC-24	JC-25	4650.24	10.00	140.0000	0.00
P- 63	JC-25	J-284	5682.36	10.00	140.0000	0.00
P- 64	JC-26	JC-27	3931.88	10.00	140.0000	0.00
P- 65	JC-27	J-212	4289.12	10.00	140.0000	0.00
P- 66	JC-28	J-214	8774.57	10.00	140.0000	0.00
67	JC-29	JC-30	12892.63	10.00	140.0000	0.00
- 68	JR-5	JR-6	5526.16	6.00	140.0000	0.00
P- 69	JC-30	JC-31	7744.47	10.00	140.0000	0.00
P- 70	JC-31	JC-31A	3686.67	10.00	140.0000	0.00
P- 71	JC-36	JC-37	2694.92	10.00	140.0000	0.00
P- 72	JC-37	JC-38	1848.73	10.00	140.0000	0.00
P- 73	JC-40	JC-41	3910.28	10.00	140.0000	0.00
P- 74	J-119	JC-41	6607.03	10.00	140.0000	0.00
P- 75	J-119	J-288	1239.94	10.00	140.0000	0.00
P- 76	J-288	J-290	263.91	10.00	140.0000	0.00
P- 77	JC-44	JC-45	8977.88	10.00	140.0000	0.00
P- 78	JC-51	JC-50	13985.02	10.00	140.0000	0.00
P- 79	JL-15	J- 91	1404.60	4.00	140.0000	0.00
P- 80	JC-53	JC-51	6894.83	10.00	140.0000	0.00
P- 81	JC-54	JC-53	3158.60	10.00	140.0000	0.00
P- 82	JC-54	JC-55	7144.96	10.00	140.0000	0.00
P- 83	JC-56	JC-55	9799.43	10.00	140.0000	0.00
P- 84	JC-57	JC-56	5181.09	10.00	140.0000	0.00
P- 85	T- 7	JC-57	9414.74	10.00	140.0000	0.00
P- 86	JC-59	T- 7	1441.55	10.00	140.0000	0.00
P- 87	JW-9	JW-9A	2147.00	8.00	140.0000	0.00
P- 88	JW-3	J-292	4711.08	8.00	140.0000	0.00
P- 89	JR-4	JR-5	2640.18	6.00	140.0000	0.00
P- 90	JL-8	JL-9	1256.26	4.00	140.0000	0.00
P- 91	JR-18	JR-19	4646.21	8.00	140.0000	0.00
P- 92	JW-6	T- 11	3510.45	8.00	140.0000	0.00
P- 93	JW-8	J-421	5530.58	8.00	140.0000	0.00
P- 94	JW-10	JW-11	3762.70	8.00	140.0000	0.00
P- 95	JW-11	J-148	1305.99	8.00	140.0000	0.00
P- 96	J- 89	J-557	12257.09	4.00	140.0000	0.00
P- 97	JW-14	J-423	3225.87	8.00	140.0000	0.00
P- 98	JW-15	JW-16	6470.64	8.00	140.0000	0.00
99	JW-16	JW-17	574.18	8.00	140.0000	0.00
100	JW-18	JW-19	1555.80	8.00	140.0000	0.00
P-101	JC-50	JBR-1	5357.73	10.00	140.0000	0.00
P-102	JW-19	J-190	5302.81	8.00	140.0000	0.00
P-103	JW-22	J-660	5006.05	8.00	140.0000	0.00
P-104	JW-27	J-126	2571.21	8.00	140.0000	0.00
P-105	J-126	J-127	227.18	8.00	140.0000	0.00
P-106	JW-28	JW-27	5299.79	8.00	140.0000	0.00
P-107	JW-29	JW-28	304.11	8.00	140.0000	0.00

P-108	J-198	JW-29	7658.87	8.00	140.0000	0.00
P-109	JW-33	JW-34	5915.76	8.00	140.0000	0.00
P-110	JW-38	JW-39	3056.89	8.00	140.0000	0.00
P-111	JW-39	J-410	1592.64	8.00	140.0000	0.00
P-112	JD-1	JD-2	1500.85	10.00	140.0000	0.00
P-113	JC-32	JC-33	3583.06	10.00	140.0000	0.00
P-114	JW-17	JW-18	11091.58	8.00	140.0000	0.00
115	JR-17	JR-18	885.45	8.00	140.0000	0.00
-116	JCO-10	JCO-12	21766.36	4.00	140.0000	0.00
P-117	JR-16	JR-17	3976.99	8.00	140.0000	0.00
P-118	JBL-26	JBL-27	3019.83	4.00	140.0000	0.00
P-119	JBL-26	JBL-25	1982.79	4.00	140.0000	0.00
P-120	JBL-25	JBL-24	3302.40	4.00	140.0000	0.00
P-121	JBL-24	JBL-23	1605.28	4.00	140.0000	0.00
P-122	JR-43	JBL-1	10092.19	4.00	140.0000	0.00
P-123	JBL-1	JBL-2	6691.69	4.00	140.0000	0.00
P-124	JN-3	T- 3	654.23	8.00	140.0000	0.00
P-125	JBL-2	J-205	480.39	4.00	140.0000	0.00
P-126	I- 14	J-297	1357.42	4.00	140.0000	0.00
P-127	JBL-5	J- 74	1291.76	4.00	140.0000	0.00
P-128	J- 75	J- 74	250.04	4.00	140.0000	0.00
P-129	J- 76	J- 77	537.48	4.00	140.0000	0.00
P-130	JBL-7A	J-129	3390.26	4.00	140.0000	0.00
P-131	J-129	J-130	86.85	4.00	140.0000	0.00
P-132	JBL-9	JBL-10	8495.98	4.00	140.0000	0.00
P-133	JBL-10	JBL-11	1444.10	4.00	140.0000	0.00
P-134	JBL-12	J- 73	2624.09	4.00	140.0000	0.00
P-135	JS-24	JS-23	12251.23	4.00	140.0000	0.00
P-136	J- 73	JBL-13	5285.25	4.00	140.0000	0.00
P-137	JBL-13	JBL-14	5313.11	4.00	140.0000	0.00
P-138	JBL-14	JBL-15	3338.14	4.00	140.0000	0.00
P-139	JBL-15	JBL-16	2163.02	4.00	140.0000	0.00
P-140	JBL-16	JBL-17	2472.42	4.00	140.0000	0.00
P-141	JBL-18	JBL-17	8250.69	4.00	140.0000	0.00
P-142	JBL-18	JBL-20	4276.33	4.00	140.0000	0.00
P-143	J- 21	J-313	873.59	8.00	140.0000	0.00
P-144	JBL-21	JBL-20	985.03	4.00	140.0000	0.00
P-145	JBL-22	JBL-21	3434.36	4.00	140.0000	0.00
P-146	JW-20	J-120	2615.20	8.00	140.0000	0.00
147	JBL-23	JBL-22	1885.89	4.00	140.0000	0.00
148	JG-1	J-239	290.95	4.00	140.0000	0.00
P-149	JS-14	J-236	75.98	4.00	140.0000	0.00
P-150	JR-15	JR-16	1130.25	8.00	140.0000	0.00
P-151	JN-12	JN-14	16441.24	8.00	140.0000	0.00
P-152	JN-11	J-170	5041.29	8.00	140.0000	0.00
P-153	JN-10	JN-11	12326.94	8.00	140.0000	0.00
P-154	JNC-4	JN-16	15852.80	8.00	140.0000	0.00
P-155	JN-17	J-121	1972.29	8.00	140.0000	0.00
P-156	JW-42	JW-43	2828.31	8.00	140.0000	0.00
P-157	JW-31	T- 12	5280.90	8.00	140.0000	0.00
P-158	JW-42	RV-2	3793.12	8.00	140.0000	0.00
P-159	JW-37	JW-38	2256.38	8.00	140.0000	0.00
P-160	JW-35	J- 2	11616.38	8.00	140.0000	0.00
P-161	JW-34	JW-35	10342.23	8.00	140.0000	0.00
P-162	JW-31	J-193	1876.42	8.00	140.0000	0.00
P-163	T- 12	WolfPtBstr	119.43	8.00	140.0000	0.00
P-164	JW-36	J- 16	4249.09	8.00	140.0000	0.00
P-165	JW-25	JW-24	1635.48	8.00	140.0000	0.00
P-166	JW-21	JW-22	5486.13	8.00	140.0000	0.00
P-167	JW-24	J-660	1621.88	8.00	140.0000	0.00
P-168	JD-3	JD-4	123.50	4.00	140.0000	0.00
P-169	J-127	JW-25	2107.62	8.00	140.0000	0.00
P-170	J-121	J-122	227.42	8.00	140.0000	0.00
P-171	JR-1	JR-2	2609.81	6.00	140.0000	0.00
P-172	JW-2	JW-3	4293.11	8.00	140.0000	0.00
P-173	JR-12	JR-13	7041.51	8.00	140.0000	0.00
P-174	JR-13	JR-14	5483.77	8.00	140.0000	0.00
P-175	JR-37	JR-38	2614.43	8.00	140.0000	0.00
P-176	JN-1	JN-2	155.98	3.00	140.0000	0.00
P-177	JN-2	JN-3	6032.19	3.00	140.0000	0.00
P-178	JR-38	JR-39	1601.09	8.00	140.0000	0.00
179	JG-14	J-109	64.59	4.00	140.0000	0.00
180	J-131	JR-35	5504.66	8.00	140.0000	0.00
P-181	JR-32	JR-31	3033.40	8.00	140.0000	0.00
P-182	JR-30	JR-31	4276.60	8.00	140.0000	0.00
P-183	JR-20	JR-21	1438.06	8.00	140.0000	0.00
P-184	JC-31A	JC-32	1631.64	10.00	140.0000	0.00
P-185	J- 71	J- 61	3946.14	8.00	140.0000	0.00
P-186	JC-9	JC-10	4453.24	10.00	140.0000	0.00
P-187	2395	JCO-4	45.78	1.00	140.0000	0.00

P-188	JC-13	JC-15	3572.18	10.00	140 0000	0.00
P-189	J-284	J-285	38.84	10.00	140 0000	0 00
P-190	JC-52	JC-59	2277 76	10.00	140.0000	0 00
P-191	JC-20	JC-21	7248 61	10 00	140 0000	0.00
P-192	J-181	J- 83	2897.24	3 00	140 0000	0.00
P-193	JH-12	J-638	4869.38	5.00	140 0000	0 00
P-194	JN-21	JN-22	7137 43	8 00	140.0000	0 00
195	J-133	J- 45	12645 40	6 00	140.0000	0 00
-196	J-273	J-252	146.69	4.00	140.0000	0.00
P-197	J- 39	J-518	20734.43	6.00	140 0000	0.00
P-198	JD-2	JD-3	2022.58	10.00	140 0000	0 00
P-199	JS-4	JS-3	8158 35	4 00	140.0000	0.00
P-200	JS-5	JS-4	5613.54	4 00	140.0000	0 00
P-201	JC-54A	JW-1	2279.31	8.00	140 0000	0.00
P-202	JS-13	I- 9	8896.94	4.00	140 0000	0.00
P-203	JS-15	J-236	1823.41	4 00	140 0000	0.00
P-204	J-236	J-237	76 71	4 00	140.0000	0 00
P-205	JR-8	JR-7	5135.39	8.00	140 0000	0 00
P-206	JR-7	JR-6	5271.45	6.00	140 0000	0.00
P-207	JR-8	J- 22	3177 08	8.00	140 0000	0.00
P-208	JR-24	J- 78	858 81	8.00	140.0000	0 00
P-209	JR-43	JR-41	2635.92	8.00	140.0000	0 00
P-210	JR-41	JR-40	1601.17	8.00	140 0000	0.00
P-211	JR-43	J-199	510.86	6.00	140 0000	0.00
P-212	JW-31	JR-1	4773.27	6.00	140 0000	0.00
P-213	JL-7	JL-8	6866 05	4 00	140 0000	0.00
P-214	JL-11	JL-12	5249 58	4 00	140 0000	0.00
P-215	JL-2	JL-3	8171.23	4.00	140.0000	0.00
P-216	J- 81	JL-35	988.37	8.00	140.0000	0 00
P-217	JCO-15	JCO-16	9709 22	4.00	140 0000	0.00
P-218	JC-40FloWelBstr		6419 57	10 00	140 0000	0.00
P-219	JCO-12	JCO-13	1913.41	4 00	140 0000	0.00
P-220	JCO-7CohagenBst		7216.17	4.00	140.0000	0 00
P-221	JCO-3	JCO-4	8778.86	4.00	140.0000	0 00
P-222	J-122	JN-19	3350 50	8 00	140.0000	0 00
P-223	JL-1	J-200	6695.43	4 00	140 0000	0.00
P-224	J-110	J-134	3822.48	12.00	140 0000	0.00
P-225	J- 81	JL-36	282.15	8.00	140.0000	0.00
P-226	JR-2	JR-3	2826.29	6.00	140.0000	0.00
227	J- 41	J- 80	1944.21	1.00	140.0000	0 00
228	JS-8	JS-7	12560 67	4 00	140 0000	0 00
P-229	JR-3	JR-4	2403.07	6 00	140 0000	0.00
P-230	JR-9	JR-10	8263.09	8.00	140.0000	0.00
P-231	JR-10	JR-11	7636.96	8.00	140.0000	0.00
P-232	JR-11	JR-12	9212 39	8 00	140.0000	0.00
P-233	JR-14	JR-15	4575 91	8 00	140 0000	0 00
P-234	J-114	J-104	2066.41	12 00	140 0000	0 00
P-235	J-124	J-123	151.79	10 00	140 0000	0 00
P-236	J-104	J-115	1416.33	12.00	140 0000	0 00
P-237	JR-32	JR-33	1071.28	8.00	140 0000	0.00
P-238	J- 78	J- 61	9946 92	8.00	140.0000	0.00
P-239	J- 43	J- 58	7414.24	4.00	140.0000	0.00
P-240	J- 39	J- 40	3021.24	1 00	140.0000	0.00
P-241	JCO-10	JCO-9	5284.38	4 00	140 0000	0 00
P-242	J- 42	RV-3	12650.12	6.00	140 0000	0 00
P-243	J- 80	J-235	331.72	1 00	140 0000	0 00
P-244	JL-3A	JL-4	69 56	4.00	140.0000	0 00
P-245	JL-5	J-302	609.53	4.00	140.0000	0.00
P-246	JR-36	JR-37	3217.39	8 00	140.0000	0.00
P-247	JR-35	JR-36	1751.47	8 00	140 0000	0.00
P-248	JR-40	JR-39	575.27	8.00	140 0000	0.00
P-249	JBL-11	JBL-12	1212 35	4.00	140 0000	0.00
P-250	T- 14@-BlmfldBs		7 72	4.00	140 0000	0 00
P-251	JBL-4	JBL-5	1905.69	4.00	140.0000	0 00
P-252	JC-48	JC-49	2766.81	10 00	140.0000	0 00
P-253	JC-47	JC-48	6322.53	10.00	140 0000	0.00
P-254	JC-46	JC-47	5309 60	10.00	140 0000	0.00
P-255	JC-45	JC45A	2133.00	10.00	140.0000	0.00
P-256	JW-12A	J- 87	337.71	8 00	140.0000	0 00
P-257	JN-24	J- 12	1819.56	8.00	140.0000	0 00
P-258	JN-23	JN-24	8817.83	8 00	140 0000	0 00
259	JL-4	JL-5	5021 73	4.00	140 0000	0.00
260	JL-3	JL-3A	1932 91	4.00	140 0000	0.00
P-261	JG-3	JG-4	2935.61	4.00	140.0000	0.00
P-262	JG-4	JG-5	505.86	4 00	140.0000	0 00
P-263	JG-5	J-233	2219 67	4.00	140.0000	0.00
P-264	JG-2	JG-3	1797 70	4.00	140 0000	0.00
P-265	J-232	JG-7	2033.42	4.00	140 0000	0.00
P-266	JG-7	JG-8	1131.87	4 00	140.0000	0.00
P-267	JG-8	JG-10	427.69	4.00	140.0000	0 00

P-268	J-117	JG-10	428.45	4.00	140.0000	0.00
P-269	JG-11	J-117	526.55	4.00	140.0000	0.00
P-270	I- 8BrsetBstr2		197.58	4.00	140.0000	0.00
P-271	JG-13	I- 8	379.64	4.00	140.0000	0.00
P-272	JG-14	JG-13	642.96	4.00	140.0000	0.00
P-273	J- 42	J- 84	25838.13	1.00	140.0000	0.00
P-274	J- 45	J-566	1303.13	6.00	140.0000	0.00
275	J- 45	J-128	5248.54	1.00	140.0000	0.00
276	J-133	JW-43	2.18	1.00	140.0000	0.00
P-277	J-254	J- 21	1552.17	1.00	140.0000	0.00
P-278	J-201	J-171	24429.02	1.00	140.0000	0.00
P-279	J-201	J-584	5177.33	1.00	140.0000	0.00
P-280	J-234	J-570	24818.83	1.00	140.0000	0.00
P-281	J- 41	J-653	4732.38	6.00	140.0000	0.00
P-282	J-254	J-568	2113.08	1.00	140.0000	0.00
P-283	J-291	J-569	104.40	1.00	140.0000	0.00
P-284	JH-2	JH-3	6449.93	3.00	140.0000	0.00
P-285	JH-3	J-241	2764.63	3.00	140.0000	0.00
P-286	J- 83	@-RV-1	4695.83	3.00	140.0000	0.00
P-287	RV-1	J-242	10477.53	3.00	140.0000	0.00
P-288	J-242	JH-8	9121.27	5.00	140.0000	0.00
P-289	JH-8	JH-9	6335.32	5.00	140.0000	0.00
P-290	JH-9	J-419	2388.09	5.00	140.0000	0.00
P-291	J-419	J-358	5323.19	5.00	140.0000	0.00
P-292	JH-11	JH-12	2672.41	5.00	140.0000	0.00
P-293	JH-13	JH-14	4103.43	5.00	140.0000	0.00
P-294	JH-14	JH-15	1794.20	5.00	140.0000	0.00
P-295	JH-15	JH-16	5209.77	5.00	140.0000	0.00
P-296	JH-17	JH-16	6245.54	5.00	140.0000	0.00
P-297	JH-18	J-179	1189.35	5.00	140.0000	0.00
P-298	JH-149	J-177	9222.73	5.00	140.0000	0.00
P-299	JH-19	JH-149	4077.78	5.00	140.0000	0.00
P-300	JS-2	2232	6887.89	4.00	140.0000	0.00
P-301	JS-3	JS-2	6543.91	4.00	140.0000	0.00
P-302	JS-9	JS-8	7700.44	4.00	140.0000	0.00
P-303	JS-11	JS-10	1260.30	4.00	140.0000	0.00
P-304	I- 9SndSprBstr		202.33	4.00	140.0000	0.00
P-305	JS-16	JS-15	1088.51	4.00	140.0000	0.00
P-306	JS-17	JS-16	7846.78	4.00	140.0000	0.00
307	JS-18	JS-17	6678.06	4.00	140.0000	0.00
308	JS-19	JS-18	969.62	4.00	140.0000	0.00
P-309	JS-20	JS-19	10537.53	4.00	140.0000	0.00
P-310	JS-22	JS-21	17176.87	4.00	140.0000	0.00
P-311	JS-23	JS-22	3172.06	4.00	140.0000	0.00
P-312	JCO-2	JCO-3	5524.92	4.00	140.0000	0.00
P-313	JCO-4	JCO-5	14619.73	4.00	140.0000	0.00
P-314	JCO-5	JCO-6	6640.30	4.00	140.0000	0.00
P-315	JCO-6	JCO-7	4735.58	4.00	140.0000	0.00
P-316	I- 10	JCO-9	19715.27	4.00	140.0000	0.00
P-317	JCO-13	JCO-14	1737.45	4.00	140.0000	0.00
P-318	JCO-14	JCO-15	1662.12	4.00	140.0000	0.00
P-319	JCO-16	J-251	11706.37	4.00	140.0000	0.00
P-320	JC-3	J-278	7492.49	10.00	140.0000	0.00
P-321	JC-7A	JC-8	1517.50	10.00	140.0000	0.00
P-322	JC-49	JC-50	1366.25	10.00	140.0000	0.00
P-323	JN-4	JN-5	4489.81	8.00	140.0000	0.00
P-324	JN-5	JN-5A	2073.26	8.00	140.0000	0.00
P-325	JN-5A	JN-6	4871.82	8.00	140.0000	0.00
P-326	JN-6	JN-7	1664.44	8.00	140.0000	0.00
P-327	JN-7	JN-8	3469.40	8.00	140.0000	0.00
P-328	JN-8	JN-9	3876.70	8.00	140.0000	0.00
P-329	JN-9	JN-10	8006.50	8.00	140.0000	0.00
P-330	J-535	2163	16596.57	1.00	140.0000	0.00
P-331	JN-14	JN-15	4487.77	8.00	140.0000	0.00
P-332	JN-15	JNC-4	1811.20	8.00	140.0000	0.00
P-333	JN-16	JN-17	3057.63	8.00	140.0000	0.00
P-334	JN-19	J-502	6187.99	8.00	140.0000	0.00
P-335	JN-20	JN-21	5662.52	8.00	140.0000	0.00
P-336	JN-22	JN-23	14331.94	8.00	140.0000	0.00
P-337	I- 11RchLmbBst1		12.36	8.00	140.0000	0.00
P-338	JW-9A	JW-10	5643.37	8.00	140.0000	0.00
339	JW-43	JWP-7	3786.55	8.00	140.0000	0.00
340	JWP-4	JWP-3	5443.29	8.00	140.0000	0.00
P-341	JWP-3	JWP-2	2705.70	8.00	140.0000	0.00
P-342	JWP-2	JWP-1	5331.10	8.00	140.0000	0.00
P-343	JWP-5	JWP-4	4250.13	8.00	140.0000	0.00
P-344	JWP-6	JWP-5	9765.12	8.00	140.0000	0.00
P-345	JWP-7	JWP-6	2243.87	8.00	140.0000	0.00
P-346	J- 1	J- 3	4623.16	8.00	140.0000	0.00
P-347	J-115	I- 1	8155.36	12.00	140.0000	0.00

P-348	J- 3	J- 14	3006.08	8.00	140.0000	0.00
P-349	J- 14	J- 15	4238.79	8.00	140.0000	0.00
P-350	J- 15	J-424	3823.23	8.00	140.0000	0.00
P-351	J- 16	JW-37	4959.65	8.00	140.0000	0.00
P-352	J-313	J- 20	170.43	8.00	140.0000	0.00
P-353	@-RV-2	J- 20	1266.70	8.00	140.0000	0.00
P-354	JW-44	J- 1	9.14	12.00	140.0000	0.00
355	I- 1	@-WIP-HS	19.54	12.00	140.0000	0.00
-356	J- 22	J- 86	2151.40	8.00	140.0000	0.00
P-357	T- 13	@-RchLmbBs	22.40	8.00	140.0000	0.00
P-358	J- 76	J- 75	2505.27	4.00	140.0000	0.00
P-359	J- 77	JBL-7A	4426.09	4.00	140.0000	0.00
P-360	J-134	J-315	4011.00	12.00	140.0000	0.00
P-361	T- 6	HelCrkBStr	52.77	6.00	140.0000	0.00
P-362	T- 6	JD-1	676.66	6.00	140.0000	0.00
P-363	J-319	J-135	5280.60	12.00	140.0000	0.00
P-364	@-FloWelBs	T- 16	135.69	10.00	140.0000	0.00
P-365	J-137	J-114	2715.55	12.00	140.0000	0.00
P-366	J-118	JG-11	958.58	4.00	140.0000	0.00
P-367	J-281	JC-5	736.54	10.00	140.0000	0.00
P-368	J- 98	JR-33	1371.73	8.00	140.0000	0.00
P-369	J-130	JBL-9	3087.52	4.00	140.0000	0.00
P-370	J-101	JN-25	387.67	10.00	140.0000	0.00
P-371	J-131	J- 98	244.33	8.00	140.0000	0.00
P-372	J-103	JN-25	1967.91	2.50	140.0000	0.00
P-373	J- 12	J-125	5806.15	8.00	140.0000	0.00
P-374	J-125	J-123	208.37	3.00	140.0000	0.00
P-375	J-138	J-149	9489.63	12.00	140.0000	0.00
P-376	J-143	J-138	839.55	12.00	140.0000	0.00
P-377	J-145	J-147	6662.06	12.00	140.0000	0.00
P-378	J-147	J-151	1847.94	12.00	140.0000	0.00
P-379	J-273	JD-4	279.56	12.00	140.0000	0.00
P-380	J-149	J-145	2297.95	12.00	140.0000	0.00
P-381	JN-3	J-364	18.23	12.00	140.0000	0.00
P-382	J-151	J-153	2446.17	12.00	140.0000	0.00
P-383	J-153	J-155	3174.68	12.00	140.0000	0.00
P-384	J-155	J-159	10260.90	12.00	140.0000	0.00
P-385	J-159	J-161	5272.44	12.00	140.0000	0.00
P-386	J-161	J-163	8932.87	12.00	140.0000	0.00
387	J-368	J-377	51.07	12.00	140.0000	0.00
388	J-165	J-394	2667.80	12.00	140.0000	0.00
P-389	J-167	J-165	2446.60	12.00	140.0000	0.00
P-390	T- 2	@-CarneySB	152.89	12.00	140.0000	0.00
P-391	J-207	J-209	9407.51	12.00	140.0000	0.00
P-392	J-209	J-217	4105.41	12.00	140.0000	0.00
P-393	J-217	J-218	7565.29	12.00	140.0000	0.00
P-394	J-218	J-219	7881.64	12.00	140.0000	0.00
P-395	J-413	J-416	4875.38	1.00	140.0000	0.00
P-396	2191	2268	5264.95	2.50	140.0000	0.00
P-397	I- 16	J-216	2348.30	10.00	140.0000	0.00
P-398	J-219	J-221	1182.57	12.00	140.0000	0.00
P-399	J-220	J-222	5251.78	12.00	140.0000	0.00
P-400	J-221	J-220	850.58	12.00	140.0000	0.00
P-401	J-222	J-223	2907.76	12.00	140.0000	0.00
P-402	J-223	J-226	6482.62	12.00	140.0000	0.00
P-403	J-226	J-227	1015.79	12.00	140.0000	0.00
P-404	J-108	J- 7	3175.96	6.00	140.0000	0.00
P-405	J- 7	J-173	2400.66	6.00	140.0000	0.00
P-406	J-173	J-176	2543.79	6.00	140.0000	0.00
P-407	J-176	JH-19	1619.03	6.00	140.0000	0.00
P-408	J-177	JH-18	2519.18	5.00	140.0000	0.00
P-409	J- 37	JH-17	1006.75	5.00	140.0000	0.00
P-410	J-179	J-246	1476.93	5.00	140.0000	0.00
P-411	J-246	J-249	30.58	5.00	140.0000	0.00
P-412	J-249	J- 37	267.35	5.00	140.0000	0.00
P-413	J-241	J-181	59.07	3.00	140.0000	0.00
P-414	J-252	JS-24	1078.36	4.00	140.0000	0.00
P-415	J-251	J-273	105.00	4.00	140.0000	0.00
P-416	J-237	JS-13	3011.86	4.00	140.0000	0.00
P-417	J-210	J-211	95.43	10.00	140.0000	0.00
P-418	J-182	JC-7	1246.84	10.00	140.0000	0.00
419	J-211	J-182	2215.84	10.00	140.0000	0.00
420	J-212	J-185	1592.86	10.00	140.0000	0.00
P-421	J-183	JC-28	2232.22	10.00	140.0000	0.00
P-422	J-185	J-183	1624.84	10.00	140.0000	0.00
P-423	J-214	JC-29	8109.00	10.00	140.0000	0.00
P-424	J- 47	J-286	684.34	10.00	140.0000	0.00
P-425	J-187	JC-35	1132.59	10.00	140.0000	0.00
P-426	J-188	J-187	1711.40	10.00	140.0000	0.00
P-427	J-286	J-287	136.45	10.00	140.0000	0.00

P-428	J-287	J-188	334.38	10.00	140.0000	0.00
P-429	J-290	J-420	10103.64	10.00	140.0000	0.00
P-430	J- 58	J-418	28589.82	4.00	140.0000	0.00
P-431	J-120	JW-21	2652.56	8.00	140.0000	0.00
P-432	J-190	J-192	1415.06	8.00	140.0000	0.00
P-433	J-191	J-293	1537.70	8.00	140.0000	0.00
P-434	J-192	J-191	305.45	8.00	140.0000	0.00
435	J-293	J-294	99.06	8.00	140.0000	0.00
436	J-294	JW-20	1882.11	8.00	140.0000	0.00
P-437	J-193	J-196	2615.57	8.00	140.0000	0.00
P-438	J-196	J-197	3366.67	8.00	140.0000	0.00
P-439	J-197	J-198	2694.08	8.00	140.0000	0.00
P-440	J-199	JL-1	11810.55	4.00	140.0000	0.00
P-441	J-200	JL-2	6511.13	4.00	140.0000	0.00
P-442	T- 15@-LmbrtBst		95.10	4.00	140.0000	0.00
P-443	LmbrtBstr	JL-6	443.76	4.00	140.0000	0.00
P-444	J-302	J-305	8.76	4.00	140.0000	0.00
P-445	J-305	I- 15	4627.82	4.00	140.0000	0.00
P-446	J-205	J-295	1649.29	4.00	140.0000	0.00
P-447	J-297	J-295	22.67	4.00	140.0000	0.00
P-448	J-227	J-228	4029.31	12.00	140.0000	0.00
P-449	J-228	J-230	3232.59	12.00	140.0000	0.00
P-450	J-233	J-232	9.14	4.00	140.0000	0.00
P-451	J-239	JG-2	1927.52	4.00	140.0000	0.00
P-452	J-285	JC-26	4551.41	10.00	140.0000	0.00
P-453	J-116	J- 72	3117.94	4.00	140.0000	0.00
P-454	J-230	JC-31A	2240.26	12.00	140.0000	0.00
P-455	J-135	J-315	2512.40	12.00	140.0000	0.00
P-456	J-319	J-137	2416.78	12.00	140.0000	0.00
P-457	Intake	J-110	3459.60	12.00	140.0000	0.00
P-458	WTP-HS	J-509	119.83	12.00	140.0000	0.00
P-459	J-157	J-344	2621.68	12.00	140.0000	0.00
P-460	J-322	J-326	2701.34	12.00	140.0000	0.00
P-461	J-326	J-341	1647.66	12.00	140.0000	0.00
P-462	J-341	JN-3	2265.89	12.00	140.0000	0.00
P-463	J-344	J-322	2060.67	12.00	140.0000	0.00
P-464	J-345	J-157	2010.88	12.00	140.0000	0.00
P-465	J-361	J-345	3882.57	12.00	140.0000	0.00
P-466	J-163	J-368	53.50	12.00	140.0000	0.00
467	J-377	J-361	1461.57	12.00	140.0000	0.00
468	J-364	J-167	3119.08	12.00	140.0000	0.00
P-469	J-378	J-207	12957.64	12.00	140.0000	0.00
P-470	J-380	J-395	1593.72	12.00	140.0000	0.00
P-471	J-394	J-380	965.58	12.00	140.0000	0.00
P-472	J-395	I- 2	638.02	12.00	140.0000	0.00
P-473	CarneySBSt	J-378	3233.81	12.00	140.0000	0.00
P-474	I- 3@-HrseCrkB		59.88	3.00	140.0000	0.00
P-475	HrseCrkBst	JN-4	13331.19	8.00	140.0000	0.00
P-476	J-170	J-372	1578.97	8.00	140.0000	0.00
P-477	J-372	J-398	1784.00	8.00	140.0000	0.00
P-478	J-383	JN-12	5669.50	8.00	140.0000	0.00
P-479	J-398	I- 4	874.77	8.00	140.0000	0.00
P-480	I- 4@-HrseCrkB		18.47	8.00	140.0000	0.00
P-481	HrseCrkBst	J-383	1754.42	8.00	140.0000	0.00
P-482	J-400	J- 27	4160.88	10.00	140.0000	0.00
P-483	J-407	J-400	5715.82	10.00	140.0000	0.00
P-484	J-408	J-407	769.19	10.00	140.0000	0.00
P-485	JC-12	T- 5	2289.00	10.00	140.0000	0.00
P-486	J- 27@-CirJdnBs		1657.56	10.00	140.0000	0.00
P-487	CirJdnBstr	I- 5	30.77	10.00	140.0000	0.00
P-488	@-HelCrkBS	J-108	1712.56	6.00	140.0000	0.00
P-489	2215	2195	3391.00	1.00	140.0000	0.00
P-490	@-BrsetBst	J-118	536.00	4.00	140.0000	0.00
P-491	@-SndSprBs	JS-11	10865.89	4.00	140.0000	0.00
P-492	@-CohagenB	T- 10	257.34	4.00	140.0000	0.00
P-493	@-RchLmbBs	JW-7	2150.48	8.00	140.0000	0.00
P-494	@-WolfPtBs	JW-33	1632.05	8.00	140.0000	0.00
P-495	J- 86	T- 13	2598.44	8.00	140.0000	0.00
P-496	RchLmbBst2	JR-9	3999.13	8.00	140.0000	0.00
P-497	BlmfldBstr	JBL-4	146.66	4.00	140.0000	0.00
P-498	J- 72	J- 79	2864.65	4.00	140.0000	0.00
499	J- 79	J- 88	3852.78	4.00	140.0000	0.00
500	J- 88	J-109	6482.41	4.00	140.0000	0.00
P-501	I- 17BrsetBstr1		278.96	4.00	140.0000	0.00
P-502	@-BrsetBst	J-417	343.78	4.00	140.0000	0.00
P-503	2215	2063	81280.98	1.00	140.0000	0.00
P-504	2062	2073	2718.32	1.00	140.0000	0.00
P-505	J-421	JW-9	8322.49	8.00	140.0000	0.00
P-506	2179	2074	503792.91	1.00	140.0000	0.00
P-507	2185	2155	813.56	1.00	140.0000	0.00

P-508	2452	JL-7	139.52	1.00	140.0000	0.00
P-509	2062	JL-35	11.53	2.50	140.0000	0.00
P-510	JL-15	2233	19371.86	2.50	140.0000	0.00
P-511	J-410	JW-40	2262.28	8.00	140.0000	0.00
P-512	2233	2215	2962.28	1.00	140.0000	0.00
P-513	J-509	J-143	4370.69	12.00	140.0000	0.00
P-514	2090	J-204	791.87	1.00	140.0000	0.00
515	J-424	JW-36	1328.35	8.00	140.0000	0.00
-516	2111	JW-35	1534.17	2.50	140.0000	0.00
P-517	2090	2092	1554.79	1.00	140.0000	0.00
P-518	2217	J-519	24096.41	1.00	140.0000	140.00
P-519	2094	2099	1118.45	1.00	140.0000	0.00
P-520	2094	2097	196.61	1.00	140.0000	0.00
P-521	2094	2098	1603.36	1.00	140.0000	0.00
P-522	2099	2090	2081.10	1.00	140.0000	0.00
P-523	2099	2100	279.32	1.00	140.0000	0.00
P-524	2102	2094	2775.63	2.50	140.0000	0.00
P-525	2102	2103	376.73	1.00	140.0000	0.00
P-526	2104	2102	7765.03	2.50	140.0000	0.00
P-527	2104	2105	3216.22	1.00	140.0000	0.00
P-528	2105	2106	317.26	1.00	140.0000	0.00
P-529	2105	2107	209.73	1.00	140.0000	0.00
P-530	2108	2104	15956.01	2.50	140.0000	0.00
P-531	2108	2110	698.41	1.00	140.0000	0.00
P-532	2111	2108	5277.34	2.50	140.0000	0.00
P-533	2111	2263	767.13	1.00	140.0000	0.00
P-534	2569	2119	2305.34	1.00	140.0000	0.00
P-535	J-126	2114	8.24	1.00	140.0000	0.00
P-536	2114	2264	1612.88	1.00	140.0000	0.00
P-537	J-149	J-531	2118.76	6.00	140.0000	0.00
P-538	@-RV-3	J- 39	8627.26	6.00	140.0000	0.00
P-539	J-561	J- 42	25070.57	6.00	140.0000	0.00
P-540	J-562	J-561	5794.65	6.00	140.0000	0.00
P-541	J-563	J-562	3318.26	6.00	140.0000	0.00
P-542	J-566	J-563	7554.85	6.00	140.0000	0.00
P-543	J-566	J-567	778.75	1.00	140.0000	0.00
P-544	J-568	J-291	3161.95	1.00	140.0000	0.00
P-545	J-569	J-234	2712.93	1.00	140.0000	0.00
P-546	J-570	J-201	11648.56	1.00	140.0000	0.00
547	J-570	J-583	791.91	1.00	140.0000	0.00
548	J-584	J-593	18045.30	1.00	140.0000	0.00
P-549	J-584	J-585	372.43	1.00	140.0000	0.00
P-550	J-416	J-603	2524.14	1.00	140.0000	0.00
P-551	J-593	J-594	1601.33	1.00	140.0000	0.00
P-552	2119	2112	8171.99	1.00	140.0000	0.00
P-553	2129	2133	15372.07	1.00	140.0000	0.00
P-554	2548	2134	1624.95	1.00	140.0000	0.00
P-555	2381	2222	4341.53	1.00	140.0000	0.00
P-556	2295	2147	1615.78	1.00	140.0000	0.00
P-557	2137	JW-2	1877.34	1.00	140.0000	0.00
P-558	2137	2238	2953.77	1.00	140.0000	0.00
P-559	2137	2139	3770.59	1.00	140.0000	0.00
P-560	2139	2142	236.83	1.00	140.0000	0.00
P-561	2139	2141	133.35	1.00	140.0000	0.00
P-562	2142	2140	5645.38	1.00	140.0000	0.00
P-563	2142	2143	109.40	1.00	140.0000	0.00
P-564	J-502	JN-20	3214.86	8.00	140.0000	0.00
P-565	2462	JN-16	65.36	1.00	140.0000	0.00
P-566	2145	2149	201.03	1.00	140.0000	0.00
P-567	2145	2148	158.74	1.00	140.0000	0.00
P-568	J-421	2240	63.21	1.00	140.0000	0.00
P-569	2150	2154	5697.80	1.00	140.0000	0.00
P-570	2152	JC-46	4358.51	1.00	140.0000	0.00
P-571	2153	2155	2067.82	1.00	140.0000	0.00
P-572	2155	2273	2462.99	1.00	140.0000	0.00
P-573	2159	2161	8681.43	1.00	140.0000	0.00
P-574	2173	J-535	7689.14	1.00	140.0000	0.00
P-575	2177	J-441	34010.77	2.50	140.0000	0.00
P-576	2174	2173	527.31	1.00	140.0000	0.00
P-577	2174	2176	536.85	1.00	140.0000	0.00
P-578	2176	J-542	2750.66	1.00	140.0000	0.00
579	J-440	2158	3381.04	1.00	140.0000	0.00
580	2344	2180	10655.89	1.00	140.0000	0.00
P-581	2332	2065	9958.58	1.00	140.0000	0.00
P-582	2333	2186	11446.65	1.00	140.0000	0.00
P-583	2184	JC-15	5690.94	1.00	140.0000	0.00
P-584	2342	2189	5533.50	1.00	140.0000	0.00
P-585	2189	2182	521.74	1.00	140.0000	0.00
P-586	2182	2183	1193.94	1.00	140.0000	0.00
P-587	2182	2181	7222.36	1.00	140.0000	0.00

P-588	2181	2188	1287.61	1.00	140 0000	0 00
P-589	2181	2179	4644.63	1 00	140 0000	0.00
P-590	2193	JC-10	3119.94	1.00	140.0000	0.00
P-591	2192	2196	10810 79	1.00	140.0000	0 00
P-592	2393	2192	475.52	1.00	140 0000	0 00
P-593	2395	2194	6189.15	1 00	140.0000	0.00
P-594	2398	2198	8571 08	1.00	140.0000	0.00
595	2198	2197	15937 83	1 00	140.0000	0.00
-596	2198	2200	1576.23	1 00	140 0000	0.00
P-597	J-418	J-116	10047.90	4 00	140 0000	0 00
P-598	2204	J-418	1811 49	1.00	140.0000	0.00
P-599	2204	2205	624.80	1.00	140.0000	0.00
P-600	2204	2207	6927.39	1.00	140.0000	0.00
P-601	2407	2206	5802.81	1 00	140 0000	0 00
P-602	2411	2211	14227 62	1.00	140 0000	0.00
P-603	2211	2209	2089.82	1.00	140.0000	0.00
P-604	2211	2218	8069.67	1.00	140.0000	0.00
P-605	2216	2213	1030.19	1 00	140.0000	0.00
P-606	2216	2219	1769 20	1.00	140.0000	0 00
P-607	2218	2216	2244.46	1.00	140.0000	0.00
P-608	2218	2221	3695.89	1.00	140.0000	0.00
P-609	2221	2220	153 76	1 00	140 0000	0.00
P-610	2221	2223	2070 52	1.00	140 0000	0.00
P-611	2426	J-507	231.87	1.00	140.0000	0.00
P-612	2381	JC-7A	149.63	1.00	140.0000	0 00
P-613	2229	J-706	3231.24	1.00	140.0000	0.00
P-614	2227	J-519	19974.48	1 00	140.0000	0.00
P-615	2217	2228	139 52	1.00	140 0000	0.00
P-616	2217	2228	251.32	1.00	140 0000	0.00
P-617	2228	2231	12197.24	1.00	140.0000	0.00
P-618	2230	J-109	12380 41	1 00	140.0000	0.00
P-619	2232	2201	1802 91	1.00	140 0000	0.00
P-620	2232	2234	39966.54	1.00	140 0000	0.00
P-621	2233	2235	190425.78	1.00	140 0000	0 00
P-622	2116	2236	781.50	1.00	140.0000	0 00
P-623	2237	J-458	4637 09	2 50	140.0000	0.00
P-624	2237	J-468	113350 58	1.00	140.0000	0.00
P-625	2238	2138	2391.66	1.00	140 0000	0.00
P-626	2238	2241	33389.62	1.00	140.0000	0.00
627	2240	2093	10252 79	1 00	140.0000	0.00
-628	2242	2109	4367.10	1.00	140.0000	0 00
P-629	J-290	J- 8	7054 74	4.00	140 0000	0.00
P-630	J- 8	J-425	7163.75	1.00	140 0000	0.00
P-631	J- 8	J-543	1605.32	4 00	140.0000	0.00
P-632	J-427	J-426	295 50	1.00	140.0000	0 00
P-633	J-427	J-428	3169 40	4.00	140.0000	0.00
P-634	J-436	2177	4693 82	1.00	140 0000	0.00
P-635	J-428	J-436	9729.16	2.50	140.0000	0.00
P-636	2284	J-410	1212.73	1 00	140 0000	0.00
P-637	2112	2113	9712 43	1 00	140.0000	0.00
P-638	2264	2117	2656 89	1 00	140.0000	0.00
P-639	2115	2267	1630 49	1.00	140.0000	0 00
P-640	2267	2266	802 38	1.00	140.0000	0 00
P-641	2270	J- 91	27.52	1.00	140 0000	0 00
P-642	2462	J-517	52511.78	1.00	140 0000	0.00
P-643	2146	2271	2209 09	1.00	140 0000	0.00
P-644	2272	2130	801 14	1.00	140.0000	0.00
P-645	2273	2274	7933.78	1.00	140 0000	0.00
P-646	J-149	J-522	3433.70	6.00	140 0000	0 00
P-647	J-512	J-525	13306.55	6 00	140 0000	0 00
P-648	2452	2191	16592.89	2 50	140 0000	0.00
P-649	J-417	J- 43	229 96	4.00	140.0000	0.00
P-650	J-417	2227	13.02	1.00	140.0000	0.00
P-651	2398	JCO-7	455.77	1.00	140 0000	0 00
P-652	JG-13	2411	17.55	1 00	140 0000	0 00
P-653	2332	JC-18	15 47	1.00	140.0000	0.00
P-654	2333	JC-19	20.35	1.00	140.0000	0.00
P-655	2342	JC-27	12.13	1.00	140 0000	0.00
P-656	2344	JC-29	107 61	1 00	140 0000	0 00
P-657	J-420	JC-44	1989 62	10 00	140 0000	0 00
P-658	J-420	2153	288.50	1.00	140.0000	0 00
659	2153	J-420	288.50	1.00	140.0000	0.00
660	2145	JNC-4	2736 15	1.00	140.0000	0.00
P-661	2150	JNC-4	7562 36	1 00	140 0000	0 00
P-662	J-148	JW-12A	4907.77	8.00	140.0000	0 00
P-663	J-148	2129	27.23	1.00	140.0000	0.00
P-664	2548	JW-10	61 29	1.00	140.0000	0.00
P-665	J-164	J-503	1150 47	1 00	140.0000	0.00
P-666	J-422	JW-13	4398.02	8.00	140 0000	0 00
P-667	J-164	J-422	7.69	1.00	140.0000	0 00

P-668	J-423	JW-15	6115.66	8.00	140.0000	0.00
P-669	2242	J-423	81.49	1.00	140.0000	0.00
P-670	2559	JW-20	73.12	1.00	140.0000	0.00
P-671	2560	JW-21	54.34	1.00	140.0000	0.00
P-672	J-174	2115	1504.64	1.00	140.0000	0.00
P-673	J-126	J-174	33.46	1.00	140.0000	0.00
P-674	J-198	2569	14.29	1.00	140.0000	0.00
675	2573	JW-34	114.42	1.00	140.0000	0.00
676	J-424	J-413	13.95	8.00	140.0000	0.00
P-677	J-441	J-440	2957.24	2.50	140.0000	0.00
P-678	2237	2159	13312.13	2.50	140.0000	0.00
P-679	J-441	J-458	4808.69	1.00	140.0000	0.00
P-680	2159	J-482	3639.95	4.00	140.0000	0.00
P-681	J-468	2239	55410.25	1.00	140.0000	0.00
P-682	J-482	J-646	827.23	4.00	140.0000	0.00
P-683	JBR-1	J-487	6998.78	1.00	140.0000	0.00
P-684	2393	JCO-2	131.66	1.00	140.0000	0.00
P-685	2686	2127	4812.22	1.00	140.0000	0.00
P-686	J-503	2127	4810.09	1.00	140.0000	0.00
P-687	2407	JG-1	47.44	1.00	140.0000	0.00
P-688	JG-1	2407	47.44	1.00	140.0000	0.00
P-689	2426	JH-16	11.21	1.00	140.0000	0.00
P-690	J-507	2224	1217.17	1.00	140.0000	0.00
P-691	JH-16	J-507	40.82	1.00	140.0000	0.00
P-692	J-512	J-516	3408.87	6.00	140.0000	0.00
P-693	J-517	2190	4045.66	1.00	140.0000	0.00
P-694	J-516	J-517	13617.04	6.00	140.0000	0.00
P-695	J-516	2295	14358.83	6.00	140.0000	0.00
P-696	2295	J-534	5363.44	6.00	140.0000	0.00
P-697	J-518	J- 41	6445.33	6.00	140.0000	0.00
P-698	J- 91	JL-16	422.61	4.00	140.0000	0.00
P-699	J-520	J-703	5506.72	6.00	140.0000	0.00
P-700	J-521	J-526	2497.65	6.00	140.0000	0.00
P-701	J-522	J-520	465.15	6.00	140.0000	0.00
P-702	J-528	J-526	6557.11	6.00	140.0000	0.00
P-703	J-525	J-159	7099.00	6.00	140.0000	0.00
P-704	J-528	J-512	2623.16	6.00	140.0000	0.00
P-705	J-529	J-514	372.83	6.00	140.0000	0.00
P-706	J-530	J-529	668.67	6.00	140.0000	0.00
707	J-531	J-530	3765.76	6.00	140.0000	0.00
708	J-532	J-518	2429.29	6.00	140.0000	0.00
P-709	J-533	J-532	10542.77	6.00	140.0000	0.00
P-710	J-534	J-533	11281.42	6.00	140.0000	0.00
P-711	J-542	J-436	1650.74	1.00	140.0000	0.00
P-712	J-543	J-427	1594.99	4.00	140.0000	0.00
P-713	J-545	J-419	884.18	1.00	140.0000	0.00
P-714	J-548	J-618	411.61	1.00	140.0000	0.00
P-715	J-553	J-620	569.89	1.00	140.0000	0.00
P-716	J-554	J-556	1061.05	1.00	140.0000	0.00
P-717	J-556	J-548	456.17	1.00	140.0000	0.00
P-718	J-618	J-545	860.88	1.00	140.0000	0.00
P-719	J-620	J-554	716.17	1.00	140.0000	0.00
P-720	J-627	J-553	1287.93	1.00	140.0000	0.00
P-721	J-629	J-627	452.35	1.00	140.0000	0.00
P-722	J-630	J-629	2034.51	1.00	140.0000	0.00
P-723	J-631	J-630	319.28	1.00	140.0000	0.00
P-724	J-636	J-631	718.11	1.00	140.0000	0.00
P-725	J-638	JH-13	105.86	5.00	140.0000	0.00
P-726	J-354	JH-11	3964.14	5.00	140.0000	0.00
P-727	J-358	J-354	1236.92	5.00	140.0000	0.00
P-728	J-360	J-647	3225.64	4.00	140.0000	0.00
P-729	J-645	J-360	1734.95	4.00	140.0000	0.00
P-730	J-646	J-645	1154.07	4.00	140.0000	0.00
P-731	J-647	Pump-1	3584.84	4.00	140.0000	0.00
P-732	@-Pump-1	T- 7	149.10	4.00	140.0000	0.00
P-733	J-649	J-650	6581.45	6.00	140.0000	0.00
P-734	J-650	J-652	4478.06	6.00	140.0000	0.00
P-735	J-652	J-691	843.57	6.00	140.0000	0.00
P-736	J-653	J-649	3364.71	6.00	140.0000	0.00
P-737	J-654	J-681	954.89	6.00	140.0000	0.00
P-738	@-RV-4	J-666	852.59	6.00	140.0000	0.00
739	J-656	J-657	5009.00	6.00	140.0000	0.00
740	J-657	J-658	5399.11	6.00	140.0000	0.00
P-741	J-658	J-659	4743.01	6.00	140.0000	0.00
P-742	J-659	J-509	7436.78	6.00	140.0000	0.00
P-743	J-661	J-660	225.97	1.00	140.0000	0.00
P-744	J-666	J-656	1313.41	6.00	140.0000	0.00
P-745	J-678	RV-4	870.49	6.00	140.0000	0.00
P-746	J-681	J-678	849.63	6.00	140.0000	0.00
P-747	J-683	J-654	1414.83	6.00	140.0000	0.00

P-748	J-691	J-683	718.74	6.00	140.0000	0.00
P-749	J-557	I- 17	118.67	4.00	140.0000	0.00
P-750	J-703	J-521	2520.34	6.00	140.0000	0.00
P-751	J-655	J-692	695.21	4.00	140.0000	0.00
P-752	J-692	J-693	1324.78	4.00	140.0000	0.00
P-753	J-693	J-694	599.16	4.00	140.0000	0.00
P-754	J-694	J-695	3506.10	4.00	140.0000	0.00
755	J-695	J-697	906.34	4.00	140.0000	0.00
756	J-696	J-698	1641.80	4.00	140.0000	0.00
P-757	J-697	J-696	861.35	4.00	140.0000	0.00
P-758	J-698	J-699	861.61	4.00	140.0000	0.00
P-759	J-699	J-700	1043.17	4.00	140.0000	0.00
P-760	J-700	J-701	1522.17	4.00	140.0000	0.00
P-761	J-701	J-702	984.90	4.00	140.0000	0.00
P-762	J-702	JS-5	846.63	4.00	140.0000	0.00
P-763	J-655@-BrsetBst		100.02	4.00	140.0000	0.00
P-764	J-704	J-636	17367.22	1.00	140.0000	0.00
P-765	J-705	J-704	1714.00	1.00	140.0000	0.00
P-766	J-706	J-705	2507.85	1.00	140.0000	0.00
SRVC-267	2116	J-661	7817.64	1.00	140.0000	0.00
SRVC-268	2560	2685	7839.12	1.00	140.0000	0.00
SRVC-274	2121	2202	925.93	1.00	140.0000	0.00
SRVC-276	2559	2125	5539.79	1.00	140.0000	0.00
SRVC-279	2127	2126	5582.87	1.00	140.0000	0.00
SRVC-362	2199	JS-4	20249.27	1.00	140.0000	0.00
SRVC-435	2573	2262	19448.39	1.00	140.0000	0.00
SRVC-443	2268	2187	6485.86	1.00	140.0000	0.00
SRVC-46	2191	2121	3179.02	1.00	140.0000	0.00
SRVC-517	2686	2130	820.20	1.00	140.0000	0.00

P U M P/L O S S   E L E M E N T   D A T A

THERE IS A PUMP AT NODE BlmfldBstr; USEFUL POWER = 2.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE BrsetBstr1; USEFUL POWER = 3.50 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE BrsetBstr2; USEFUL POWER = 1.50 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE CarneySBSt; USEFUL POWER = 150.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE CirJdnBstr; USEFUL POWER = 25.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE CohagenBst; USEFUL POWER = 0.50 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE FloWelBstr; USEFUL POWER = 75.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE HelCrkBStr; USEFUL POWER = 5.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE HrseCrkBst; USEFUL POWER = 35.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE HrseCrkBst; USEFUL POWER = 25.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE Intake; USEFUL POWER = 25.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE LmbrtBstr; USEFUL POWER = 2.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE Pump-1; USEFUL POWER = 1.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE RchLmbBst1; USEFUL POWER = 60.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE RchLmbBst2; USEFUL POWER = 7.50 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE SndSprBstr; USEFUL POWER = 3.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE WolfPtBstr; USEFUL POWER = 15.00 (Efficiency = 75.00%)

THERE IS A PUMP AT NODE WTP-HS; USEFUL POWER = 175.00 (Efficiency = 75.00%)

E N D   N O D E   D A T A

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	JUNCTION ELEVATION (ft)	EXTERNAL GRADE (ft)

2062	0.00	2365.35
2063	2.00	2247.57
2065	0.00	2528.44
2073	2.00	2403.57
2074	0.00	2552.13
2090	0.00	2302.00
2092	0.00	2223.03
2093	2.00	2493.47
2094	0.00	2343.89
2097	0.00	2330.28
2098	0.00	2368.20
2099	0.00	2304.39
2100	0.00	2322.47
2102	0.00	2416.07
2103	0.00	2383.39
2104	0.00	2363.68
2105	0.00	2258.36
2106	0.00	2205.38
2107	0.00	2282.38
2108	0.00	2359.08
2109	0.00	2358.13
2110	0.00	2320.30
2111	0.00	2442.25
2112	2.00	2397.53
2113	2.00	2332.41
2114	2.00	2472.67
2115	2.00	2480.44
2116	2.00	2432.97
2117	2.00	2451.44
2119	0.00	2268.47
2121	0.00	2511.81
2125	2.00	2329.56
2126	2.00	2588.22
2127	0.00	2603.01
2129	0.00	2467.68
2130	0.00	2546.55
2133	0.00	2438.02
2134	2.00	2438.22
2137	0.00	2432.67
2138	0.00	2443.53
2139	0.00	2421.98
2140	0.00	2480.74
2141	0.00	2426.60
2142	0.00	2426.37
2143	0.00	2418.30
2145	0.00	2829.92
2146	0.00	2558.26
2147	0.00	2288.02
2148	0.00	2819.48
2149	0.00	2812.49
2150	0.00	2749.67
2152	0.00	2714.56
2153	0.00	2661.02
2154	0.00	2722.07
2155	0.00	2728.44
2158	2.00	3207.70
2159	0.00	2843.27
2161	2.00	2670.30
2163	2.00	2689.89
2173	2.00	2782.67
2174	0.00	2751.27
2176	0.00	2760.85
2177	2.00	2816.27
2179	2.00	2337.63
2180	0.00	2427.85
2181	0.00	2293.53
2182	0.00	2350.09
2183	0.00	2387.23
2184	0.00	2611.05
2185	0.00	2735.00
2186	0.00	2771.35
2187	2.00	2274.96
2188	0.00	2400.13
2189	0.00	2361.64
2190	0.00	2574.93
2191	0.00	2419.16
2192	0.00	2758.79
2193	0.00	2558.95
2194	0.00	2864.13
2195	2.00	2423.68

2196	4.00	2676.04
2197	0.00	2861.15
2198	0.00	2872.93
2199	0.00	3237.20
2200	0.00	2958.36
2201	0.00	3122.34
2202	2.00	2549.34
2204	0.00	2872.57
2205	0.00	2893.01
2206	0.00	2868.96
2207	0.00	2780.64
2209	0.00	3342.12
2211	0.00	3300.81
2213	0.00	3258.79
2215	0.00	2372.21
2216	0.00	3263.41
2217	0.00	2937.00
2218	0.00	3367.38
2219	0.00	3188.71
2220	0.00	3012.79
2221	0.00	3061.25
2222	2.00	2551.57
2223	0.00	2959.38
2224	0.00	2834.80
2227	0.00	2884.51
2228	0.00	2900.88
2229	0.00	2529.42
2230	0.00	2764.86
2231	2.00	2313.28
2232	0.00	3204.75
2233	0.00	2347.30
2234	0.00	2973.19
2235	0.00	2228.54
2236	2.00	2419.38
2237	0.00	3309.77
2238	0.00	2511.41
2239	2.00	2898.71
2240	2.00	2451.01
2241	0.00	2707.38
2242	0.00	2461.97
2262	2.00	2344.35
2263	2.00	2336.02
2264	2.00	2386.97
2266	2.00	2409.18
2267	2.00	2406.33
2268	2.00	2459.71
2270	2.00	2382.97
2271	2.00	2595.99
2272	2.00	2507.93
2273	2.00	2761.94
2274	2.00	2741.27
2284	2.00	2260.23
2295	0.00	2310.66
2332	2.00	2473.52
2333	2.00	2464.14
2342	4.00	2405.01
2344	2.00	2715.02
2381	2.00	2661.84
2393	2.00	2753.34
2395	4.00	2766.00
2398	4.00	3000.88
2407	0.00	2882.28
2411	4.00	2976.01
2426	2.00	2833.85
2452	2.00	2399.80
2462	2.00	2576.70
2548	2.00	2594.55
2559	2.00	2374.80
2560	5.00	2446.55
2569	2.00	2309.67
2573	4.00	2456.62
2685	0.00	2430.01
2686	0.00	2600.65
BlmfldBstr	0.00	2581.00
BrsetBstr1	0.00	2860.00
BrsetBstr2	0.00	3065.00
CarneySBSt	0.00	2444.00
CirJdnBstr	0.00	2540.00
CohagenBst	0.00	3000.00
FloWelBstr	0.00	2689.00

HelCrkBStr		0.00	2620 00
HrseCrkBst		0.00	2406.00
HrseCrkBst		0 00	2660.00
Intake		0 00	2300 00
J- 1		0.00	2566 00
J- 2		0.00	2566 53
J- 3		0.00	2395.52
- 7		0.00	2716.79
J- 8		0.00	2750.00
J- 12		0.00	2437 00
J- 14		0.00	2376 88
J- 15		0.00	2303.28
J- 16		0 00	2338.54
J- 20		0.00	2239.72
J- 21		0.00	2282.00
J- 22		0.00	2319 98
J- 27		0.00	2600.00
J- 37		0 00	2800.00
J- 39		2.00	2084.00
J- 40		2.00	2050.00
J- 41		0.00	2140 00
J- 42	Community Ha	0 00	2024.00
J- 43		0 00	2877.00
J- 44		0 00	2840.00
J- 45		0.00	1968.00
J- 47		0.00	2540.00
J- 58		0.00	3040 00
J- 61		0.00	2446 26
J- 71		0 00	2442.22
J- 72		0 00	2966.00
J- 73		0.00	2926.00
J- 74		0.00	2611.08
J- 75		0.00	2611 00
J- 76		0 00	2596.87
J- 77		0 00	2596.00
J- 78		0.00	2372.56
J- 79		0.00	2938.00
J- 80		0.00	2200 00
J- 81		0.00	2377 00
- 83	Maniage Spri	0 00	2686 00
J- 84		0 00	2238.00
J- 85		0.00	2690.00
J- 86		0.00	2329.49
J- 87		0.00	2548 00
J- 88		0.00	3041.00
J- 89		0.00	2900.00
J- 91		0 00	2397.19
J- 98		0 00	2493.62
J-101		0.00	2421.00
J-103		0.00	2437.66
J-104		0.00	2340.00
J-108		0.00	2682 97
J-109	Brusett Chur	2.00	3012.91
J-110		0.00	2351 00
J-114		0 00	2340 00
J-115		0 00	2340.00
J-116		0 00	2914.00
J-117		0.00	2978.00
J-118		0.00	3000.00
J-119		0.00	2807.19
J-120		0.00	2415 00
J-121		0 00	2655 00
J-122		0 00	2655 88
J-123		0 00	2422.38
J-124		0.00	2422.00
J-125		0.00	2422.00
J-126		0.00	2466.07
J-127		0 00	2466 00
J-128		0 00	0 00
J-129		0.00	2686.68
J-130		0.00	2686.00
-131		0.00	2500.00
J-133		5.00	2054.53
J-134		0 00	2369.00
J-135		0.00	2370 00
J-137		2.00	2405.00
J-138		0.00	2500.00
J-143		0.00	2540.00
J-145		2 00	2361 00
J-147		0 00	2418 00

J-148	0.00	2457.38
J-149	0.00	2361.00
J-151	0.00	2500.00
J-153	4.00	2538.00
J-155	0.00	2500.00
J-157	0.00	2500.00
J-159	0.00	2383.00
J-161	0.00	2312.00
J-163	0.00	2368.00
J-164	0.00	2476.54
J-165	2.00	2304.00
J-167	2.00	2380.00
J-170	0.00	2610.55
J-171	2.00	2010.00
J-173	0.00	2721.84
J-174	0.00	2461.71
J-176	0.00	2691.44
J-177	0.00	2773.54
J-179	0.00	2760.00
J-181	0.00	2364.65
J-182	0.00	2650.00
J-183	0.00	2433.10
J-185	0.00	2440.00
J-187	0.00	2600.00
J-188	0.00	2580.00
J-190	0.00	2346.00
J-191	0.00	2326.41
J-192	0.00	2317.35
J-193	0.00	2366.13
J-196	0.00	2354.94
J-197	0.00	2349.17
J-198	0.00	2309.09
J-199	0.00	2485.00
J-200	0.00	2441.89
J-201	0.00	2014.00
J-204	2.00	2300.00
J-205	0.00	2494.70
J-207	2.00	2657.00
J-209	2.00	2562.00
J-210	0.00	2600.00
J-211	0.00	2600.00
J-212	0.00	2400.00
J-214	0.00	2640.63
J-216	0.00	2590.02
J-217	2.00	2556.00
J-218	0.00	2541.00
J-219	2.00	2411.00
J-220	2.00	2440.00
J-221	2.00	2440.00
J-222	2.00	2535.00
J-223	4.00	2539.00
J-226	2.00	2496.00
J-227	2.00	2495.00
J-228	2.00	2486.00
J-230	2.00	2473.00
J-232	0.00	3113.00
J-233	0.00	3113.00
J-234	0.00	2118.00
J-235	2.00	2200.00
J-236	0.00	2773.60
J-237	0.00	2773.00
J-239	0.00	2900.00
J-241	0.00	2364.00
J-242	0.00	2846.00
J-246	0.00	2780.00
J-249	0.00	2780.00
J-251	0.00	2631.00
J-252	0.00	2631.00
J-254	0.00	0.00
J-273	0.00	2631.71
J-278	0.00	2651.42
J-281	0.00	2651.00
J-284	0.00	2500.00
J-285	0.00	2500.00
J-286	0.00	2560.00
J-287	0.00	2560.00
J-288	0.00	2809.00
J-290	0.00	2809.00
J-291	0.00	0.00
J-292	0.00	2414.93

J-293	0 00	2360.00
J-294	0 00	2360.00
J-295	0.00	2540 00
J-297	0 00	2540 00
J-302	0 00	2345.10
J-305	0.00	2345.00
J-313	0.00	2239 00
-315	0 00	2470 00
J-319	0.00	2360.00
J-322	0.00	2465.00
J-326	0.00	2452 00
J-341	0 00	2400 00
J-344	0.00	2509.00
J-345	0.00	2446.00
J-354	0 00	2764.02
J-358	0 00	2784 65
J-360	0.00	2662 00
J-361	0.00	2425.00
J-364	0 00	2377.00
J-368	0.00	2368 00
J-372	0.00	2616.03
J-377	0.00	2368.00
J-378	0 00	2488.00
J-380	0 00	2400 00
J-383	0.00	2688 00
J-394	0.00	2340.00
J-395	0.00	2420.00
J-398	0 00	2620.00
J-400	0.00	2596 19
J-407	0.00	2628 30
J-408	0 00	2618.88
J-410	0.00	2306.33
J-413	2.00	2300.00
J-416	0.00	2344 00
J-417	0 00	0 00
J-418	0 00	2894.00
J-419	0.00	2827.00
J-420	0.00	2660 34
J-421	0.00	2450.39
-422	0 00	2498.28
J-423	0.00	2461.34
J-424	0.00	2300.00
J-425	2 00	2600 00
J-426	1 00	2700.00
J-427	2 00	2685.00
J-428	0.00	2644.00
J-436	0.00	2783.00
J-440	0.00	3016 14
J-441	0.00	3006 00
J-458	2 00	3093.00
J-468	2 00	2885.30
J-482	0 00	2737.00
J-487	2.00	2589.00
J-502	2.00	2570 00
J-503	2.00	2472 21
J-507	0.00	2836.97
J-509	0 00	2510.00
J-512	0 00	2560.00
J-514	2.00	2300 00
J-516	0.00	2491.00
J-517	0.00	2563.58
J-518	0.00	2020.00
J-519	0.00	0.00
J-520	0.00	2420 00
J-521	0.00	2755.00
J-522	0 00	2410.00
J-525	0.00	2590.00
J-526	0.00	2639 00
J-528	0 00	2662 00
J-529	0.00	2300.00
J-530	0.00	2350.00
-531	0.00	2350.00
J-532	0.00	2057.00
J-533	0 00	2126 00
J-534	2.00	2310.00
J-535	0.00	3001.73
J-542	0 00	2776.00
J-543	0 00	2760 00
J-545	0 00	2893.66
J-548	0.00	2828 73

J-553	0.00	2833.36
J-554	0.00	2807.44
J-556	0.00	2837.36
J-557	0.00	0.00
J-561	2.00	2030.00
J-562	0.00	1989.00
J-563	2.00	1984.00
J-566	2.00	1990.00
J-567	2.00	2000.00
J-568	2.00	2174.00
J-569	0.00	2150.00
J-570	0.00	2104.00
J-583	2.00	2100.00
J-584	0.00	2013.00
J-585	2.00	2013.00
J-593	0.00	2210.00
J-594	2.00	2200.00
J-603	2.00	2160.00
J-618	0.00	2849.01
J-620	0.00	2829.39
J-627	0.00	2800.55
J-629	0.00	2849.86
J-630	0.00	2770.73
J-631	0.00	2777.52
J-636	0.00	2848.22
J-638	0.00	2791.44
J-645	0.00	2736.00
J-646	0.00	2763.00
J-647	0.00	2581.00
J-649	0.00	2180.00
J-650	0.00	2070.00
J-652	0.00	2231.00
J-653	0.00	2260.00
J-654	0.00	2304.00
J-655	0.00	2860.00
J-656	0.00	2548.00
J-657	0.00	2550.00
J-658	0.00	2656.00
J-659	0.00	2489.00
J-660	0.00	2443.63
J-661	2.00	2442.48
J-666	0.00	2595.00
J-678	0.00	2393.00
J-681	0.00	2316.00
J-683	0.00	2183.00
J-691	0.00	2154.00
J-692	0.00	2900.00
J-693	0.00	3000.00
J-694	0.00	3052.00
J-695	0.00	3108.00
J-696	0.00	3195.00
J-697	0.00	3103.00
J-698	0.00	3048.00
J-699	0.00	3032.00
J-700	0.00	3000.00
J-701	0.00	3144.00
J-702	0.00	3011.00
J-703	0.00	2534.00
J-704	0.00	2639.07
J-705	0.00	2667.58
J-706	0.00	2620.40
JBL-1	1.00	2534.10
JBL-10	1.00	2894.37
JBL-11	0.00	2900.00
JBL-12	0.00	2884.01
JBL-13	1.00	2759.60
JBL-14	1.00	2718.04
JBL-15	1.00	2744.87
JBL-16	1.00	2761.53
JBL-17	1.00	2779.50
JBL-18	1.00	2701.38
JBL-2	1.00	2497.75
JBL-20	1.00	2685.50
JBL-21	3.00	2673.50
JBL-22	1.00	2734.93
JBL-23	1.00	2682.65
JBL-24	1.00	2646.86
JBL-25	0.00	2711.25
JBL-26	0.00	2718.53
JBL-27	1.00	2665.56

JBL-28	Bloomfield	5.00	2613.18
JBL-4		0.00	2581.00
JBL-5		0.00	2539.74
JBL-7A		1.00	2652.50
JBL-9		1.00	2796.53
JBR-1		46.00	2592.81
JC-1		2.00	2601.86
JC-10		2.00	2625.90
JC-11		2.00	2624.00
JC-12		2.00	2496.60
JC-13		2.00	2449.44
JC-15		2.00	2538.52
JC-16		2.00	2519.86
JC-17		2.00	2487.03
JC-18		2.00	2472.89
JC-19		2.00	2463.51
JC-2		2.00	2593.89
JC-20		2.00	2479.48
JC-21		6.00	2480.11
JC-22		2.00	2449.80
JC-23		2.00	2422.80
JC-24		2.00	2438.84
JC-25		4.00	2464.17
JC-26		4.00	2529.04
JC-27		4.00	2404.40
JC-28		2.00	2487.13
JC-29		2.00	2714.33
JC-3		2.00	2582.00
JC-30		4.00	2615.73
JC-31		2.00	2557.15
JC-31A	Flowing Well	4.00	2468.86
JC-32		2.00	2451.31
JC-33		0.00	2468.59
JC-34		2.00	2492.21
JC-35		0.00	2643.38
JC-36		2.00	2610.58
JC-37		2.00	2546.89
JC-38		2.00	2601.86
JC-39		2.00	2642.43
JC-40		2.00	2741.39
JC-41		4.00	2762.55
JC-44		2.00	2636.96
JC-45		4.00	2693.18
JC45A		0.00	2740.00
JC-46		4.00	2731.00
JC-47		0.00	2675.00
JC-48		0.00	2628.00
JC-49		2.00	2570.00
JC-5		4.00	2664.67
JC-50		4.00	2571.75
JC-51		4.00	2542.98
JC-52		5.00	2450.98
JC-53		4.00	2534.62
JC-54		2.00	2536.82
JC-54A		300.00	2430.15
JC-55		2.00	2499.06
JC-56		2.00	2476.79
JC-57		2.00	2451.93
JC-59		4.00	2443.90
JC-6		2.00	2585.59
JC-7		2.00	2671.17
JC-7A		2.00	2661.16
JC-8		2.00	2683.40
JC-9		2.00	2529.80
JCO-10		2.00	2717.32
JCO-12		5.00	2601.04
JCO-13		2.00	2616.00
JCO-14		2.00	2636.00
JCO-15		2.00	2658.47
JCO-16		2.00	2770.00
JCO-2		2.00	2741.00
JCO-3		4.00	2761.73
JCO-4		4.00	2776.00
JCO-5		4.00	2892.00
JCO-6		2.00	2957.83
JCO-7		4.00	2986.31
JCO-9		2.00	2752.84
JD-1		0.00	2685.47
JD-1Ann		0.00	2623.74
JD-2	Well Capacit	250.00	2606.03

JD-3		0.00	2580.00
JD-4		0.00	2669.89
JG-1		0.00	2881.58
JG-10		2.00	2950.00
JG-11		2.00	3200.00
JG-13		4.00	2980.00
JG-14	Brusett Chur	2.00	3012.91
JG-2		2.00	2997.85
JG-3		10.00	3194.46
JG-4		2.00	3150.00
JG-5		0.00	3100.00
JG-7		2.00	3099.01
JG-8		0.00	2980.00
JH-1		2.00	2281.99
JH-11		2.00	2797.68
JH-12		2.00	2810.40
JH-13		2.00	2774.00
JH-14		4.00	2750.00
JH-149		2.00	2658.00
JH-15		2.00	2755.00
JH-16		2.00	2833.13
JH-17		2.00	2840.81
JH-18		2.00	2774.00
JH-19		2.00	2647.00
JH-2		2.00	2268.94
JH-3		2.00	2250.00
JH-8		6.00	2938.06
JH-9		2.00	2875.51
JL-1		2.00	2418.80
JL-10		4.00	2412.67
JL-11		4.00	2393.00
JL-12		2.00	2407.78
JL-13		4.00	2392.40
JL-14		2.00	2458.56
JL-15		4.00	2423.95
JL-16		2.00	2382.07
JL-2		2.00	2425.10
JL-3		4.00	2406.31
JL-35		0.00	2362.42
JL-36		15.00	2385.58
JL-3A		0.00	2375.38
JL-4		0.00	2354.65
JL-5		0.00	2364.88
JL-6		2.00	2506.35
JL-7		2.00	2399.19
JL-8		2.00	2365.47
JL-9		2.00	2396.27
JN-1		2.00	2273.66
JN-10		4.00	2517.01
JN-11		2.00	2518.68
JN-12		5.00	2762.42
JN-14		2.00	2640.00
JN-15		2.00	2740.00
JN-16		2.00	2572.00
JN-17		2.00	2629.12
JN-19		4.00	2605.00
JN-2		2.00	2273.66
JN-20		2.00	2500.00
JN-21		2.00	2514.84
JN-22		2.00	2495.42
JN-23		0.00	2471.87
JN-24		2.00	2425.95
JN-25		0.00	2421.26
JN-3		2.00	2377.74
JN-4		2.00	2460.00
JN-5		4.00	2485.16
JN-5A		2.00	2503.00
JN-6		2.00	2651.72
JN-7		4.00	2536.46
JN-8		4.00	2509.00
JN-9		2.00	2507.00
JNC-4		4.00	2646.24
JR-1		2.00	2343.20
JR-10		2.00	2351.01
JR-11		2.00	2322.44
JR-12		2.00	2154.07
JR-13		2.00	2185.73
JR-14		2.00	2140.59
JR-15		0.00	2156.50
JR-16		0.00	2158.93

JR-17	0.00	2204.82
JR-18	0.00	2212.72
JR-19	2.00	2231.88
JR-2	2.00	2312.17
JR-20	2.00	2277.04
JR-21	0.00	2284.00
JR-22	2.00	2329.95
R-23	2.00	2406.73
JR-24	2.00	2387.71
JR-28	0.00	2477.45
JR-29	2.00	2494.70
JR-3	2.00	2279.63
JR-30	0.00	2417.82
JR-31	0.00	2398.50
JR-32	0.00	2439.60
JR-33	0.00	2480.76
JR-35	0.00	2522.68
JR-36	2.00	2480.30
JR-37	0.00	2494.83
JR-38	0.00	2458.33
JR-39	5.00	2478.37
JR-4	2.00	2255.89
JR-40	0.00	2485.19
JR-41	2.00	2485.88
JR-43	5.00	2485.88
JR-5	2.00	2246.64
JR-6	2.00	2221.87
JR-7	2.00	2234.60
JR-8	4.00	2272.09
JR-9	2.00	2456.75
JS-10	2.00	2976.17
JS-11	2.00	3042.00
JS-13	5.00	2851.00
JS-14	4.00	2773.60
JS-15	5.00	2740.11
JS-16	2.00	2772.00
JS-17	2.00	2862.00
JS-18	2.00	2860.59
JS-19	2.00	2860.00
JS-2	2.00	3134.00
JS-20	2.00	2860.00
JS-21	4.00	2813.00
JS-22	4.00	2750.00
JS-23	2.00	2740.00
JS-24	4.00	2670.00
JS-3	2.00	3140.00
JS-4	4.00	3044.00
JS-5	6.00	3000.00
JS-6	6.00	3038.00
JS-7	2.00	2850.00
JS-8	4.00	2975.00
JS-9	2.00	3048.23
JW-1	2.00	2425.49
JW-10	2.00	2593.89
JW-11	2.00	2472.60
JW-12A	2.00	2548.00
JW-13	4.00	2498.11
JW-14	2.00	2496.41
JW-15	2.00	2394.01
JW-16	2.00	2518.12
JW-17	2.00	2516.51
JW-18	2.00	2360.22
JW-19	2.00	2380.00
JW-2	5.00	2422.38
JW-20	2.00	2366.59
JW-21	5.00	2445.93
JW-22	2.00	2541.93
JW-24	2.00	2407.00
JW-25	5.00	2414.05
JW-27	2.00	2405.78
JW-28	2.00	2356.29
W-29	2.00	2369.34
JW-3	2.00	2396.14
JW-31	4.00	2395.45
JW-33	2.00	2406.47
JW-34	4.00	2477.25
JW-35	5.00	2363.93
JW-36	2.00	2298.98
JW-37	4.00	2276.09
JW-38	2.00	2231.22

JW-39		2.00	2302.13	
JW-40		2.00	2256.97	
JW-42		6.00	2139.84	
JW-43		5.00	2054.53	
JW-44		0.00	2566.53	
JW-6		2.00	2421.59	
JW-7		0.00	2516.94	
JW-8		2.00	2397.88	
JW-9		2.00	2477.94	
JW-9A		2.00	2424.00	
JWP-1	Wolf Point D	260.00	1997.00	
JWP-2		2.00	1985.00	
JWP-3		2.00	1980.00	
JWP-4		2.00	1984.00	
JWP-5	Air Port	2.00	1985.00	
JWP-6		2.00	1980.00	
JWP-7	L&C Campgrou	4.00	1987.00	
LmbrtBstr		0.00	2524.00	
Pump-1		0.00	2452.00	
R- 1		----	2200.00	2250.00
RchLmbBst1		0.00	2477.00	
RchLmbBst2		0.00	2400.00	
RV-1		0.00	2750.00	
RV-2	Wolf Point R	----	2204.42	2296.73
RV-3		0.00	2058.00	
RV-4		----	2453.00	2522.23
SndSprBstr		0.00	2864.00	
T- 1	WTP	----	2510.00	2530.00
T- 2		----	2444.00	2514.00
T- 3		----	2406.21	2561.00
T- 4		----	2660.00	2747.00
T- 5		----	2540.00	2626.00
T- 6		----	2620.00	2723.00
T- 7		----	2452.65	2760.00
T- 8		----	3065.00	3151.00
T- 9		----	2864.00	2955.00
T- 10		----	2999.69	3060.00
T- 11		----	2477.00	2551.00
T- 12		----	2416.24	2500.00
T- 13		----	2400.04	2460.00
T- 14		----	2581.00	2643.00
T- 15		----	2524.45	2570.00
T- 16		----	2689.00	2762.00
T- 17	Steve Forks	----	2860.00	2937.00
WolfPtBstr		0.00	2416.00	
WTP-HS		0.00	2510.00	

O U T P U T   O P T I O N   D A T A

OUTPUT SELECTION: ALL RESULTS ARE INCLUDED IN THE TABULATED OUTPUT
MAXIMUM AND MINIMUM PRESSURES = 5
MAXIMUM AND MINIMUM VELOCITIES = 5

S Y S T E M   C O N F I G U R A T I O N

NUMBER OF PIPES .... (p) = 776
NUMBER OF END NODES .... (j) = 748
NUMBER OF PRIMARY LOOPS ....(l) = 11
NUMBER OF SUPPLY NODES ....(f) = 18
NUMBER OF SUPPLY ZONES .... (z) = 1

==
ase: 0

RESULTS OBTAINED AFTER 20 TRIALS: ACCURACY = 0.00008

S I M U L A T I O N   D E S C R I P T I O N   (L A B E L)

Missouri River Option w/ service to Wolf Point

P I P E L I N E   R E S U L T S

STATUS CODE: XX -CLOSED PIPE   CV -CHECK VALVE

PIPE NAME	NODE NUMBERS #1	NODE NUMBERS #2	FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL+ML/1000 (ft/ft)	HL/1000 (ft/ft)
P- 1	JN-19	2146	2.00	3.24	0.00	0.82	4.00	4.00
P- 2	JL-10	JL-11	41.00	4.73	0.00	1.05	1.26	1.26
P- 3	JW-13	JW-14	470.35	19.63	0.00	3.00	3.94	3.94
P- 4	JR-19	JR-20	112.87	2.22	0.00	0.72	0.28	0.28
P- 5	JR-22	JR-23	108.87	0.68	0.00	0.69	0.26	0.26
P- 6	JR-23	JR-24	106.87	0.52	0.00	0.68	0.25	0.25
P- 7	J- 44	JS-14	30.08	1.48	0.00	0.77	0.71	0.71
P- 8	JR-28	JR-29	104.87	0.86	0.00	0.67	0.24	0.24
P- 9	J- 71	JR-28	104.87	0.16	0.00	0.67	0.24	0.24
P- 10	J-292	JW-6	703.76	62.65	0.00	4.49	8.31	8.31
P- 11	JC-52	J-124	687.61	11.77	0.00	2.81	2.68	2.68
P- 12	JC45A	JC-46	781.26	9.42	0.00	3.19	3.40	3.40
P- 13	JBL-27	JBL-28	5.00	0.06	0.00	0.13	0.03	0.03
P- 14	JW-7	JW-8	500.35	22.84	0.00	3.19	4.42	4.42
P- 15	JR-29	JR-30	102.87	0.89	0.00	0.66	0.24	0.24
P- 16	JL-6	JL-7	59.00	26.37	0.00	1.51	2.46	2.46
P- 17	JL-9	JL-10	45.00	18.34	0.00	1.15	1.49	1.49
P- 18	JL-12	JL-13	35.00	10.03	0.00	0.89	0.94	0.94
P- 19	JL-13	JL-14	31.00	5.75	0.00	0.79	0.75	0.75
P- 20	JL-14	JL-15	29.00	5.24	0.00	0.74	0.66	0.66
P- 21	JL-16	JL-35	17.00	0.05	0.00	0.11	0.01	0.01
P- 22	JD-1Ann	J- 85	0.00	0.00	0.00	0.00	0.00	0.00
P- 23	JS-6	JS-5	18.26	2.61	0.00	0.47	0.28	0.28
P- 24	JH-2	JH-1	2.00	0.06	0.00	0.09	0.02	0.02
P- 25	JS-7	JS-6	24.26	1.81	0.00	0.62	0.48	0.48
P- 26	JS-10	JS-9	32.26	1.81	0.00	0.82	0.81	0.81
P- 27	JS-20	JS-21	66.36	6.68	0.00	1.69	3.06	3.06
P- 28	J- 87	J-422	480.35	6.57	0.00	3.07	4.10	4.10
P- 29	J-123	JW-2	1012.76	20.01	0.00	6.46	16.30	16.30
P- 30	JW-2	JW-1	302.00	0.98	0.00	1.93	1.73	1.73
P- 31	JC-54A	J-101	0.00	0.00	0.00	0.00	0.00	0.00
32	JW-40	J- 21	308.00	7.03	0.00	1.97	1.80	1.80
33	R- 1	Intake	339.88	0.31	0.00	0.96	0.30	0.30
P- 34	J- 2	JW-44	326.00	0.04	0.00	0.92	0.28	0.28
P- 35	JD-1Ann	JD-1	474.60	1.12	0.00	1.94	1.35	1.35
P- 36	JR-21	JR-22	110.87	0.35	0.00	0.71	0.27	0.27
P- 37	J- 89	J- 44	30.08	1.28	0.00	0.77	0.71	0.71
P- 38	JC-33	JC-34	549.58	4.18	0.00	2.24	1.77	1.77
P- 39	JC-34	J- 47	547.58	2.68	0.00	2.24	1.76	1.76
P- 40	JC-35	JC-36	547.58	15.37	0.00	2.24	1.76	1.76
P- 41	JC-38	JC-39	541.58	5.43	0.00	2.21	1.73	1.73
P- 42	JC-39	J-216	539.58	13.68	0.00	2.20	1.71	1.71
P- 43	JC-2	JC-1	476.60	3.59	0.00	1.95	1.36	1.36
P- 44	JC-3	JC-2	478.60	11.22	0.00	1.95	1.37	1.37
P- 45	J-281	J-278	480.60	0.06	0.00	1.96	1.38	1.38
P- 46	JC-1	JD-1Ann	474.60	4.33	0.00	1.94	1.35	1.35
P- 47	JC-6	JC-5	484.60	5.09	0.00	1.98	1.40	1.40
P- 48	JC-7A	JC-7	488.60	8.91	0.00	2.00	1.43	1.43
P- 49	JC-9	JC-8	496.60	6.75	0.00	2.03	1.47	1.47
P- 50	J-408	JC-11	502.60	1.48	0.00	2.05	1.50	1.50
P- 51	JC-11	JC-10	500.60	5.71	0.00	2.04	1.49	1.49
P- 52	JC-13	JC-12	500.28	5.32	0.00	2.04	1.49	1.49
P- 53	JC-16	JC-15	504.28	8.89	0.00	2.06	1.51	1.51
P- 54	JC-17	JC-16	506.28	3.27	0.00	2.07	1.52	1.52
P- 55	JC-18	JC-17	508.28	9.58	0.00	2.08	1.53	1.53
P- 56	JC-19	JC-18	512.28	3.45	0.00	2.09	1.56	1.56
P- 57	J-210	JC-6	486.60	1.59	0.00	1.99	1.42	1.42
P- 58	JC-20	JC-19	516.28	0.91	0.00	2.11	1.58	1.58
P- 59	JC-22	JC-21	524.28	13.55	0.00	2.14	1.62	1.62
P- 60	JC-23	JC-22	526.28	15.35	0.00	2.15	1.64	1.64
P- 61	JC-24	JC-23	528.28	1.98	0.00	2.16	1.65	1.65
P- 62	JC-25	JC-24	530.28	7.72	0.00	2.17	1.66	1.66
P- 63	J-284	JC-25	534.28	9.56	0.00	2.18	1.68	1.68
64	JC-27	JC-26	538.28	6.71	0.00	2.20	1.71	1.71
65	J-212	JC-27	548.28	7.57	0.00	2.24	1.77	1.77
P- 66	J-214	JC-28	550.28	15.59	0.00	2.25	1.78	1.78
P- 67	JC-30	JC-29	554.28	23.22	0.00	2.26	1.80	1.80
P- 68	JR-5	JR-6	133.14	8.53	0.00	1.51	1.54	1.54
P- 69	JC-31	JC-30	558.28	14.13	0.00	2.28	1.83	1.83
P- 70	JC-31A	JC-31	560.28	6.77	0.00	2.29	1.84	1.84
P- 71	JC-36	JC-37	545.58	4.71	0.00	2.23	1.75	1.75
P- 72	JC-37	JC-38	543.58	3.21	0.00	2.22	1.74	1.74

P- 73	JC-40	JC-41	805.10	14.06	0.00	3.29	3.60	3.60
P- 74	JC-41	J-119	801.10	23.54	0.00	3.27	3.56	3.56
P- 75	J-119	J-288	801.10	4.42	0.00	3.27	3.56	3.56
P- 76	J-288	J-290	801.10	0.94	0.00	3.27	3.56	3.56
P- 77	JC-44	JC-45	785.26	30.82	0.00	3.21	3.43	3.43
P- 78	JC-50	JC-51	723.26	41.23	0.00	2.95	2.95	2.95
P- 79	JL-15	J- 91	21.00	0.51	0.00	0.54	0.36	0.36
80	JC-51	JC-53	719.26	20.12	0.00	2.94	2.92	2.92
- 81	JC-53	JC-54	715.26	9.12	0.00	2.92	2.89	2.89
P- 82	JC-54	JC-55	713.26	20.53	0.00	2.91	2.87	2.87
P- 83	JC-55	JC-56	711.26	28.01	0.00	2.91	2.86	2.86
P- 84	JC-56	JC-57	709.26	14.73	0.00	2.90	2.84	2.84
P- 85	JC-57	T- 7	707.26	26.63	0.00	2.89	2.83	2.83
P- 86	T- 7	JC-59	696.61	3.96	0.00	2.85	2.75	2.75
P- 87	JW-9	JW-9A	492.35	9.20	0.00	3.14	4.29	4.29
P- 88	JW-3	J-292	703.76	39.14	0.00	4.49	8.31	8.31
P- 89	JR-4	JR-5	135.14	4.19	0.00	1.53	1.59	1.59
P- 90	JL-8	JL-9	47.00	2.03	0.00	1.20	1.62	1.62
P- 91	JR-18	JR-19	114.87	1.34	0.00	0.73	0.29	0.29
P- 92	JW-6	T- 11	701.76	29.01	0.00	4.48	8.26	8.26
P- 93	JW-8	J-421	498.35	24.25	0.00	3.18	4.38	4.38
P- 94	JW-10	JW-11	484.35	15.65	0.00	3.09	4.16	4.16
P- 95	JW-11	J-148	482.35	5.39	0.00	3.08	4.13	4.13
P- 96	J-557	J- 89	30.08	8.68	0.00	0.77	0.71	0.71
P- 97	JW-14	J-423	468.35	12.61	0.00	2.99	3.91	3.91
P- 98	JW-15	JW-16	466.35	25.09	0.00	2.98	3.88	3.88
P- 99	JW-16	JW-17	464.35	2.21	0.00	2.96	3.85	3.85
P-100	JW-18	JW-19	460.35	5.89	0.00	2.94	3.79	3.79
P-101	JC-50	JBR-1	48.00	0.10	0.00	0.20	0.02	0.02
P-102	JW-19	J-190	458.35	19.91	0.00	2.93	3.76	3.76
P-103	JW-22	J-660	440.35	17.45	0.00	2.81	3.49	3.49
P-104	J-126	JW-27	415.35	8.04	0.00	2.65	3.13	3.13
P-105	J-127	J-126	427.35	0.75	0.00	2.73	3.30	3.30
P-106	JW-27	JW-28	413.35	16.43	0.00	2.64	3.10	3.10
P-107	JW-28	JW-29	411.35	0.93	0.00	2.63	3.07	3.07
P-108	JW-29	J-198	409.35	23.33	0.00	2.61	3.05	3.05
P-109	JW-33	JW-34	345.00	13.13	0.00	2.20	2.22	2.22
P-110	JW-38	JW-39	314.00	5.70	0.00	2.00	1.86	1.86
P-111	JW-39	J-410	312.00	2.93	0.00	1.99	1.84	1.84
112	JD-1	JD-2	126.60	0.18	0.00	0.52	0.12	0.12
113	JC-32	JC-33	549.58	6.35	0.00	2.24	1.77	1.77
P-114	JW-17	JW-18	462.35	42.33	0.00	2.95	3.82	3.82
P-115	JR-17	JR-18	114.87	0.26	0.00	0.73	0.29	0.29
P-116	JCO-10	JCO-12	84.04	103.29	0.00	2.15	4.75	4.75
P-117	JR-16	JR-17	114.87	1.15	0.00	0.73	0.29	0.29
P-118	JBL-26	JBL-27	6.00	0.11	0.00	0.15	0.04	0.04
P-119	JBL-25	JBL-26	6.00	0.07	0.00	0.15	0.04	0.04
P-120	JBL-24	JBL-25	6.00	0.12	0.00	0.15	0.04	0.04
P-121	JBL-23	JBL-24	7.00	0.08	0.00	0.18	0.05	0.05
P-122	JR-43	JBL-1	33.23	8.59	0.00	0.85	0.85	0.85
P-123	JBL-1	JBL-2	32.23	5.38	0.00	0.82	0.80	0.80
P-124	JN-3	T- 3	226.39	0.67	0.00	1.44	1.02	1.02
P-125	JBL-2	J-205	31.23	0.36	0.00	0.80	0.76	0.76
P-126	J-297	I- 14	31.23	1.03	0.00	0.80	0.76	0.76
P-127	JBL-5	J- 74	22.00	0.51	0.00	0.56	0.40	0.40
P-128	J- 74	J- 75	22.00	0.10	0.00	0.56	0.40	0.40
P-129	J- 76	J- 77	22.00	0.21	0.00	0.56	0.40	0.40
P-130	JBL-7A	J-129	21.00	1.23	0.00	0.54	0.36	0.36
P-131	J-129	J-130	21.00	0.03	0.00	0.54	0.36	0.36
P-132	JBL-9	JBL-10	20.00	2.82	0.00	0.51	0.33	0.33
P-133	JBL-10	JBL-11	19.00	0.44	0.00	0.49	0.30	0.30
P-134	JBL-12	J- 73	19.00	0.79	0.00	0.49	0.30	0.30
P-135	JS-23	JS-24	56.36	27.74	0.00	1.44	2.26	2.26
P-136	J- 73	JBL-13	19.00	1.60	0.00	0.49	0.30	0.30
P-137	JBL-13	JBL-14	18.00	1.45	0.00	0.46	0.27	0.27
P-138	JBL-14	JBL-15	17.00	0.82	0.00	0.43	0.25	0.25
P-139	JBL-15	JBL-16	16.00	0.48	0.00	0.41	0.22	0.22
P-140	JBL-16	JBL-17	15.00	0.48	0.00	0.38	0.20	0.20
P-141	JBL-17	JBL-18	14.00	1.42	0.00	0.36	0.17	0.17
P-142	JBL-18	JBL-20	13.00	0.64	0.00	0.33	0.15	0.15
P-143	J- 21	J-313	298.00	1.48	0.00	1.90	1.69	1.69
144	JBL-20	JBL-21	12.00	0.13	0.00	0.31	0.13	0.13
145	JBL-21	JBL-22	9.00	0.26	0.00	0.23	0.08	0.08
P-146	JW-20	J-120	452.35	9.58	0.00	2.89	3.66	3.66
P-147	JBL-22	JBL-23	8.00	0.11	0.00	0.20	0.06	0.06
P-148	JG-1	J-239	0.00	0.00	0.00	0.00	0.00	0.00
P-149	JS-14	J-236	26.08	0.04	0.00	0.67	0.54	0.54
P-150	JR-15	JR-16	114.87	0.33	0.00	0.73	0.29	0.29
P-151	JN-12	JN-14	356.60	38.78	0.00	2.28	2.36	2.36
P-152	JN-11	J-170	355.40	11.82	0.00	2.27	2.34	2.34

P-153	JN-10	JN-11	357.40	29 20	0 00	2.28	2.37	2 37
P-154	JNC-4	JN-16	348 60	35 86	0.00	2 22	2.26	2.26
P-155	JN-17	J-121	341 16	4.29	0.00	2 18	2 17	2.17
P-156	JW-42	JW-43	292.00	4 61	0.00	1 86	1 63	1.63
P-157	JW-31	I- 12	256.21	6 75	0 00	1.64	1.28	1.28
P-158	RV-2	JW-42	298 00	6 42	0 00	1.90	1.69	1 69
P-159	JW-37	JW-38	316.00	4.26	0.00	2 02	1.89	1 89
160	JW-35	J- 2	326.00	23.21	0.00	2 08	2 00	2 00
-161	JW-34	JW-35	335.00	21 73	0 00	2 14	2 10	2.10
P-162	J-193	JW-31	403 35	5 56	0 00	2.57	2.96	2.96
P-163	I- 12	WolfPtBstr	347 00	0 27	0 00	2.21	2.24	2.24
P-164	JW-36	J- 16	320 00	8.20	0 00	2.04	1.93	1.93
P-165	JW-24	JW-25	432.35	5.51	0.00	2 76	3.37	3.37
P-166	JW-21	JW-22	442.35	19.29	0.00	2 82	3 52	3 52
P-167	J-660	JW-24	434.35	5.51	0.00	2 77	3 40	3 40
P-168	JD-4	JD-3	123 40	1.19	0.00	3 15	9 67	9 67
P-169	JW-25	J-127	427 35	6 95	0 00	2.73	3 30	3 30
P-170	J-121	J-122	341.16	0.49	0 00	2.18	2.17	2.17
P-171	JR-1	JR-2	141.14	4.49	0.00	1 60	1.72	1.72
P-172	JW-2	JW-3	705 76	35.86	0.00	4 50	8 35	8.35
P-173	JR-12	JR-13	118 87	2 17	0.00	0.76	0 31	0 31
P-174	JR-13	JR-14	116 87	1 64	0 00	0 75	0 30	0.30
P-175	JR-37	JR-38	100.87	0 59	0 00	0.64	0 23	0 23
P-176	JN-2	JN-1	2.00	0.00	0.00	0.09	0 02	0.02
P-177	JN-3	JN-2	4.00	0.41	0.00	0.18	0.07	0.07
P-178	JR-38	JR-39	100 87	0.36	0.00	0.64	0.23	0.23
P-179	J-109	JG-14	44 27	0.09	0.00	1.13	1.45	1.45
P-180	J-131	JR-35	102 87	1.30	0.00	0 66	0.24	0.24
P-181	JR-31	JR-32	102.87	0 72	0 00	0 66	0 24	0.24
P-182	JR-30	JR-31	102.87	1 01	0 00	0.66	0 24	0 24
P-183	JR-20	JR-21	110.87	0.39	0.00	0 71	0 27	0.27
P-184	JC-31A	JC-32	551 58	2.91	0.00	2.25	1.78	1.78
P-185	J- 61	J- 71	104.87	0.97	0.00	0 67	0.24	0.24
P-186	JC-10	JC-9	498.60	6 59	0 00	2 04	1.48	1.48
P-187	JCO-4	2395	4.00	0 66	0 00	1 63	14.43	14.43
P-188	JC-15	JC-13	502.28	5.36	0 00	2 05	1 50	1.50
P-189	J-285	J-284	534 28	0.07	0.00	2.18	1 68	1 68
P-190	JC-59	JC-52	692 61	6.20	0.00	2.83	2 72	2.72
P-191	JC-21	JC-20	518 28	11.53	0.00	2.12	1.59	1 59
192	J- 83	J-181	6.00	0 42	0.00	0.27	0.15	0.15
193	J-638	JH-12	18.00	0 45	0 00	0 29	0.09	0.09
P-194	JN-21	JN-22	329.16	14 52	0 00	2 10	2.03	2.03
P-195	J-133	J- 45	8 00	0.11	0.00	0.09	0 01	0 01
P-196	J-252	J-273	52 36	0.29	0.00	1.34	1 98	1 98
P-197	J-518	J- 39	4.00	0.05	0.00	0 05	0.00	0 00
P-198	JD-3	JD-2	123.40	0 23	0.00	0.50	0 11	0.11
P-199	JS-4	JS-3	4.00	0 14	0 00	0 10	0.02	0 02
P-200	JS-5	JS-4	8.00	0.34	0 00	0 20	0.06	0.06
P-201	JW-1	JC-54A	300.00	3.90	0.00	1 91	1.71	1.71
P-202	I- 9	JS-13	60 28	22.81	0.00	1 54	2.56	2.56
P-203	J-236	JS-15	81 36	8.15	0.00	2 08	4.47	4.47
P-204	J-237	J-236	55 28	0.17	0.00	1 41	2.18	2.18
P-205	JR-7	JR-8	129.14	1.85	0.00	0.82	0.36	0.36
P-206	JR-6	JR-7	131.14	7 92	0.00	1 49	1 50	1.50
P-207	JR-8	J- 22	125.14	1 08	0.00	0.80	0 34	0 34
P-208	JR-24	J- 78	104.87	0 21	0 00	0.67	0 24	0 24
P-209	JR-41	JR-43	93 87	0.53	0 00	0 60	0.20	0 20
P-210	JR-40	JR-41	95 87	0.33	0 00	0.61	0.21	0 21
P-211	JR-43	J-199	55.64	0.16	0.00	0 63	0.31	0.31
P-212	JW-31	JR-1	143.14	8.43	0.00	1 62	1.77	1.77
P-213	JL-7	JL-8	49.00	12.00	0.00	1 25	1.75	1.75
P-214	JL-11	JL-12	37.00	5 45	0 00	0 94	1.04	1.04
P-215	JL-2	JL-3	51 64	15.73	0.00	1 32	1 93	1.93
P-216	JL-35	J- 81	15 00	0.01	0 00	0.10	0 01	0 01
P-217	JCO-15	JCO-16	73 04	35 53	0.00	1.86	3.66	3 66
P-218	FloWelBstr	JC-40	807.10	23 19	0.00	3 30	3.61	3.61
P-219	JCO-12	JCO-13	79.04	8 10	0.00	2 02	4.24	4.24
P-220	CohagenBst	JCO-7	34.00	6.41	0.00	0 87	0.89	0.89
P-221	JCO-4	JCO-3	12 00	1.13	0 00	0.31	0.13	0.13
P-222	J-122	JN-19	341 16	7.28	0 00	2.18	2 17	2 17
P-223	JL-1	J-200	53.64	13.83	0.00	1.37	2.07	2 07
224	J-110	J-134	339.88	1 15	0.00	0.96	0.30	0.30
225	J- 81	JL-36	15.00	0.00	0.00	0 10	0.01	0.01
P-226	JR-2	JR-3	139 14	4.74	0.00	1 58	1.68	1 68
P-227	J- 41	J- 80	2 00	7.77	0 00	0.82	4.00	4.00
P-228	JS-8	JS-7	26.26	6.91	0 00	0.67	0 55	0 55
P-229	JR-3	JR-4	137.14	3 92	0.00	1.56	1.63	1 63
P-230	JR-9	JR-10	124.87	2.79	0.00	0.80	0.34	0 34
P-231	JR-10	JR-11	122.87	2.50	0.00	0.78	0.33	0.33
P-232	JR-11	JR-12	120 87	2.93	0 00	0 77	0.32	0.32

P-233	JR-14	JR-15	114 87	1 32	0.00	0.73	0 29	0.29
P-234	J-114	J-104	337 87	0.61	0.00	0.96	0.30	0.30
P-235	J-124	J-123	687.61	0.41	0.00	2 81	2.68	2.68
P-236	J-104	J-115	337.87	0.42	0 00	0 96	0.30	0 30
P-237	JR-32	JR-33	102 87	0 25	0.00	0.66	0.24	0 24
P-238	J- 78	J- 61	104.87	2.43	0.00	0 67	0.24	0.24
P-239	J- 43	J- 58	46 27	11.65	0 00	1 18	1.57	1.57
240	J- 39	J- 40	2 00	12 07	0.00	0.82	4.00	4.00
241	JCO-9	JCO-10	86.04	26.19	0.00	2.20	4.96	4 96
P-242	J- 42	RV-3	0 00	0.00	0 00	0.00	0.00	0 00
P-243	J- 80	J-235	2 00	1.33	0 00	0 82	4.00	4.00
P-244	JL-3A	JL-4	47.64	0 12	0 00	1.22	1.66	1.66
P-245	JL-5	J-302	47.64	1.01	0.00	1.22	1 66	1.66
P-246	JR-36	JR-37	100 87	0.73	0.00	0 64	0.23	0.23
P-247	JR-35	JR-36	102 87	0 41	0 00	0 66	0.24	0.24
P-248	JR-39	JR-40	95.87	0.12	0.00	0 61	0.21	0.21
P-249	JBL-11	JBL-12	19.00	0.37	0.00	0.49	0.30	0.30
P-250	T- 14BlmfldBstr		22.00	0.00	0.00	0.56	0.40	0.40
P-251	JBL-4	JBL-5	22 00	0 76	0 00	0 56	0.40	0.40
P-252	JC-48	JC-49	777.26	9.32	0.00	3.17	3.37	3 37
P-253	JC-47	JC-48	777.26	21.30	0.00	3.17	3.37	3.37
P-254	JC-46	JC-47	777 26	17 89	0 00	3 17	3 37	3.37
P-255	JC-45	JC45A	781.26	7 25	0 00	3 19	3.40	3.40
P-256	JW-12A	J- 87	480.35	1.38	0.00	3 07	4.10	4.10
P-257	JN-24	J- 12	325.16	3.62	0.00	2 08	1.99	1.99
P-258	JN-23	JN-24	327 16	17.73	0.00	2.09	2.01	2 01
P-259	JL-4	JL-5	47 64	8.33	0.00	1 22	1 66	1 66
P-260	JL-3	JL-3A	47.64	3 21	0 00	1 22	1.66	1 66
P-261	JG-4	JG-3	12.00	0.38	0 00	0 31	0.13	0.13
P-262	JG-5	JG-4	14 00	0.09	0.00	0.36	0.17	0.17
P-263	J-233	JG-5	14 00	0.38	0.00	0 36	0 17	0.17
P-264	JG-3	JG-2	2.00	0.01	0 00	0 05	0.00	0 00
P-265	JG-7	J-232	14.00	0.35	0.00	0 36	0.17	0.17
P-266	JG-8	JG-7	16 00	0.25	0.00	0.41	0.22	0.22
P-267	JG-10	JG-8	16 00	0 09	0.00	0.41	0.22	0.22
P-268	J-117	JG-10	18.00	0.12	0 00	0 46	0 27	0.27
P-269	JG-11	J-117	18.00	0.14	0 00	0 46	0 27	0.27
P-270	T- 8BrsetBstr2		20.00	0.07	0.00	0.51	0.33	0 33
P-271	JG-13	T- 8	34 27	0 34	0.00	0.87	0.90	0.90
272	JG-14	JG-13	42.27	0.85	0.00	1.08	1.33	1.33
273	J- 42	J- 84	0.00	0.00	0.00	0 00	0 00	0.00
P-274	J- 45	J-566	8.00	0.01	0.00	0.09	0 01	0 01
P-275	J- 45	J-128	0 00	0 00	0.00	0.00	0.00	0 00
P-276	JW-43	J-133	13.00	0.28	0 00	5.31	127.98	127 98
P-277	J- 21	J-254	10.00	122.20	0 00	4 08	78 73	78.73
P-278	J-201	J-171	2 00	97.62	0 00	0 82	4 00	4.00
P-279	J-201	J-584	4 00	74 69	0.00	1.63	14 43	14.43
P-280	J-234	J-570	8.00	1292.53	0.00	3.27	52.08	52.08
P-281	J- 41	J-653	0.00	0.00	0 00	0.00	0.00	0 00
P-282	J-254	J-568	10.00	166.36	0 00	4.08	78.73	78 73
P-283	J-291	J-569	8 00	5.44	0 00	3 27	52.08	52 08
P-284	JH-3	JH-2	4 00	0.44	0 00	0 18	0 07	0 07
P-285	J-241	JH-3	6.00	0 40	0 00	0.27	0 15	0.15
P-286	RV-1	J- 83	6.00	0 68	0.00	0.27	0 15	0.15
P-287	J-242	RV-1	6.00	1.52	0 00	0.27	0 15	0.15
P-288	JH-8	J-242	6 00	0.11	0 00	0 10	0.01	0 01
P-289	JH-9	JH-8	12 00	0 28	0 00	0 20	0.04	0 04
P-290	J-419	JH-9	14.00	0 14	0.00	0.23	0 06	0.06
P-291	J-358	J-419	14.00	0.31	0.00	0.23	0 06	0.06
P-292	JH-12	JH-11	16 00	0.20	0.00	0.26	0 07	0.07
P-293	JH-14	JH-13	20 00	0.46	0.00	0 33	0.11	0 11
P-294	JH-15	JH-14	24.00	0 28	0.00	0.39	0.16	0 16
P-295	JH-16	JH-15	26.00	0.95	0.00	0.42	0.18	0 18
P-296	JH-17	JH-16	30 00	1.48	0 00	0.49	0 24	0.24
P-297	JH-18	J-179	32 00	0.32	0 00	0 52	0 27	0.27
P-298	JH-149	J-177	34.00	2 76	0 00	0 56	0.30	0.30
P-299	JH-19	JH-149	36.00	1.36	0.00	0.59	0.33	0.33
P-300	JS-2	2232	0 00	0.00	0.00	0.00	0 00	0.00
P-301	JS-3	JS-2	2.00	0.03	0 00	0.05	0 00	0.00
P-302	JS-9	JS-8	30.26	5 51	0 00	0 77	0 72	0 72
P-303	JS-11	JS-10	34.26	1.13	0 00	0.87	0.90	0 90
304	T- 9SndSprBstr		36.26	0.20	0.00	0.93	1 00	1.00
305	JS-15	JS-16	76 36	4.32	0.00	1.95	3.97	3.97
P-306	JS-16	JS-17	74.36	29 68	0 00	1 90	3 78	3.78
P-307	JS-17	JS-18	72.36	24 02	0.00	1.85	3.60	3.60
P-308	JS-18	JS-19	70 36	3.31	0.00	1.80	3.41	3.41
P-309	JS-19	JS-20	68.36	34.11	0.00	1.75	3 24	3.24
P-310	JS-21	JS-22	62.36	46 90	0.00	1.59	2 73	2.73
P-311	JS-22	JS-23	58.36	7 66	0 00	1 49	2.42	2.42
P-312	JCO-3	JCO-2	8.00	0.34	0.00	0.20	0.06	0.06

P-313	JCO-5	JCO-4	20.00	4.86	0.00	0.51	0.33	0.33
P-314	JCO-6	JCO-5	24.00	3.09	0.00	0.61	0.47	0.47
P-315	JCO-7	JCO-6	26.00	2.56	0.00	0.66	0.54	0.54
P-316	I- 10	JCO-9	88.04	101.97	0.00	2.25	5.17	5.17
P-317	JCO-13	JCO-14	77.04	7.02	0.00	1.97	4.04	4.04
P-318	JCO-14	JCO-15	75.04	6.39	0.00	1.92	3.85	3.85
P-319	JCO-16	J-251	71.04	40.69	0.00	1.81	3.48	3.48
320	J-278	JC-3	480.60	10.36	0.00	1.96	1.38	1.38
-321	JC-8	JC-7A	494.60	2.21	0.00	2.02	1.46	1.46
P-322	JC-49	JC-50	775.26	4.58	0.00	3.17	3.35	3.35
P-323	JN-4	JN-5	379.40	11.88	0.00	2.42	2.65	2.65
P-324	JN-5	JN-5A	375.40	5.38	0.00	2.40	2.59	2.59
P-325	JN-5A	JN-6	373.40	12.52	0.00	2.38	2.57	2.57
P-326	JN-6	JN-7	371.40	4.23	0.00	2.37	2.54	2.54
P-327	JN-7	JN-8	367.40	8.65	0.00	2.34	2.49	2.49
P-328	JN-8	JN-9	363.40	9.47	0.00	2.32	2.44	2.44
P-329	JN-9	JN-10	361.40	19.36	0.00	2.31	2.42	2.42
P-330	J-535	2163	2.00	66.32	0.00	0.82	4.00	4.00
P-331	JN-14	JN-15	354.60	10.48	0.00	2.26	2.33	2.33
P-332	JN-15	JNC-4	352.60	4.18	0.00	2.25	2.31	2.31
P-333	JN-16	JN-17	343.16	6.72	0.00	2.19	2.20	2.20
P-334	JN-19	J-502	335.16	13.01	0.00	2.14	2.10	2.10
P-335	JN-20	JN-21	331.16	11.65	0.00	2.11	2.06	2.06
P-336	JN-22	JN-23	327.16	28.82	0.00	2.09	2.01	2.01
P-337	I- 11	RchLmbBst1	500.35	0.05	0.00	3.19	4.42	4.42
P-338	JW-9A	JW-10	490.35	24.01	0.00	3.13	4.25	4.25
P-339	JW-43	JWP-7	274.00	5.48	0.00	1.75	1.45	1.45
P-340	JWP-4	JWP-3	264.00	7.36	0.00	1.68	1.35	1.35
P-341	JWP-3	JWP-2	262.00	3.61	0.00	1.67	1.33	1.33
P-342	JWP-2	JWP-1	260.00	7.01	0.00	1.66	1.31	1.31
P-343	JWP-5	JWP-4	266.00	5.83	0.00	1.70	1.37	1.37
P-344	JWP-6	JWP-5	268.00	13.57	0.00	1.71	1.39	1.39
P-345	JWP-7	JWP-6	270.00	3.16	0.00	1.72	1.41	1.41
P-346	J- 1	J- 3	326.00	9.24	0.00	2.08	2.00	2.00
P-347	J-115	T- 1	337.87	2.42	0.00	0.96	0.30	0.30
P-348	J- 3	J- 14	326.00	6.01	0.00	2.08	2.00	2.00
P-349	J- 14	J- 15	326.00	8.47	0.00	2.08	2.00	2.00
P-350	J- 15	J-424	326.00	7.64	0.00	2.08	2.00	2.00
P-351	J- 16	JW-37	320.00	9.57	0.00	2.04	1.93	1.93
352	J-313	J- 20	298.00	0.29	0.00	1.90	1.69	1.69
-353	J- 20	RV-2	298.00	2.14	0.00	1.90	1.69	1.69
P-354	JW-44	J- 1	326.00	0.00	0.00	0.92	0.28	0.28
P-355	T- 1	WIP-HS	1656.89	0.11	0.00	4.70	5.63	5.63
P-356	J- 22	J- 86	125.14	0.73	0.00	0.80	0.34	0.34
P-357	T- 13	RchLmbBst2	126.87	0.01	0.00	0.81	0.35	0.35
P-358	J- 75	J- 76	22.00	0.99	0.00	0.56	0.40	0.40
P-359	J- 77	JBL-7A	22.00	1.76	0.00	0.56	0.40	0.40
P-360	J-134	J-315	339.88	1.20	0.00	0.96	0.30	0.30
P-361	T- 6	HelCrkBStr	38.00	0.01	0.00	0.43	0.15	0.15
P-362	JD-1	T- 6	348.00	6.19	0.00	3.95	9.15	9.15
P-363	J-135	J-319	339.88	1.58	0.00	0.96	0.30	0.30
P-364	I- 16	FloWelBstr	807.10	0.49	0.00	3.30	3.61	3.61
P-365	J-137	J-114	337.87	0.80	0.00	0.96	0.30	0.30
P-366	J-118	JG-11	20.00	0.32	0.00	0.51	0.33	0.33
P-367	JC-5	J-281	480.60	1.02	0.00	1.96	1.38	1.38
P-368	JR-33	J- 98	102.87	0.32	0.00	0.66	0.24	0.24
P-369	J-130	JBL-9	21.00	1.12	0.00	0.54	0.36	0.36
P-370	J-101	JN-25	0.00	0.00	0.00	0.00	0.00	0.00
P-371	J- 98	J-131	102.87	0.06	0.00	0.66	0.24	0.24
P-372	J-103	JN-25	0.00	0.00	0.00	0.00	0.00	0.00
P-373	J- 12	J-125	325.16	11.54	0.00	2.08	1.99	1.99
P-374	J-125	J-123	325.16	49.18	0.00	14.76	236.02	236.02
P-375	J-138	J-149	1656.89	53.44	0.00	4.70	5.63	5.63
P-376	J-143	J-138	1656.89	4.73	0.00	4.70	5.63	5.63
P-377	J-145	J-147	1468.91	30.02	0.00	4.17	4.51	4.51
P-378	J-147	J-151	1468.91	8.33	0.00	4.17	4.51	4.51
P-379	J-273	JD-4	123.40	0.01	0.00	0.35	0.05	0.05
P-380	J-149	J-145	1470.91	10.38	0.00	4.17	4.52	4.52
P-381	JN-3	J-364	1409.95	0.08	0.00	4.00	4.18	4.18
P-382	J-151	J-153	1468.91	11.02	0.00	4.17	4.51	4.51
P-383	J-153	J-155	1464.91	14.23	0.00	4.16	4.48	4.48
384	J-155	J-159	1464.91	46.00	0.00	4.16	4.48	4.48
-385	J-159	J-161	1642.34	29.21	0.00	4.66	5.54	5.54
P-386	J-161	J-163	1642.34	49.49	0.00	4.66	5.54	5.54
P-387	J-368	J-377	1642.34	0.28	0.00	4.66	5.54	5.54
P-388	J-165	J-394	1405.95	11.08	0.00	3.99	4.15	4.15
P-389	J-167	J-165	1407.95	10.19	0.00	3.99	4.17	4.17
P-390	I- 2	CarneySBSt	1141.86	0.43	0.00	3.24	2.83	2.83
P-391	J-207	J-209	1139.86	26.50	0.00	3.23	2.82	2.82
P-392	J-209	J-217	1137.86	11.53	0.00	3.23	2.81	2.81

P-393	J-217	J-218	1135.86	21.17	0.00	3.22	2.80	2.80
P-394	J-218	J-219	1135.86	22.06	0.00	3.22	2.80	2.80
P-395	J-413	J-416	2.00	19.48	0.00	0.82	4.00	4.00
P-396	2191	2268	4.00	0.88	0.00	0.26	0.17	0.17
P-397	J-216	T- 16	539.58	4.02	0.00	2.20	1.71	1.71
P-398	J-219	J-221	1133.86	3.30	0.00	3.22	2.79	2.79
P-399	J-220	J-222	1129.86	14.56	0.00	3.20	2.77	2.77
400	J-221	J-220	1131.86	2.37	0.00	3.21	2.78	2.78
-401	J-222	J-223	1127.86	8.03	0.00	3.20	2.76	2.76
P-402	J-223	J-226	1123.86	17.79	0.00	3.19	2.74	2.74
P-403	J-226	J-227	1121.86	2.78	0.00	3.18	2.74	2.74
P-404	J-108	J- 7	38.00	0.48	0.00	0.43	0.15	0.15
P-405	J- 7	J-173	38.00	0.36	0.00	0.43	0.15	0.15
P-406	J-173	J-176	38.00	0.39	0.00	0.43	0.15	0.15
P-407	J-176	JH-19	38.00	0.25	0.00	0.43	0.15	0.15
P-408	J-177	JH-18	34.00	0.75	0.00	0.56	0.30	0.30
P-409	J- 37	JH-17	32.00	0.27	0.00	0.52	0.27	0.27
P-410	J-179	J-246	32.00	0.40	0.00	0.52	0.27	0.27
P-411	J-246	J-249	32.00	0.01	0.00	0.52	0.27	0.27
P-412	J-249	J- 37	32.00	0.07	0.00	0.52	0.27	0.27
P-413	J-181	J-241	6.00	0.01	0.00	0.27	0.15	0.15
P-414	JS-24	J-252	52.36	2.13	0.00	1.34	1.98	1.98
P-415	J-251	J-273	71.04	0.37	0.00	1.81	3.48	3.48
P-416	JS-13	J-237	55.28	6.58	0.00	1.41	2.18	2.18
P-417	J-211	J-210	486.60	0.14	0.00	1.99	1.42	1.42
P-418	JC-7	J-182	486.60	1.76	0.00	1.99	1.42	1.42
P-419	J-182	J-211	486.60	3.14	0.00	1.99	1.42	1.42
P-420	J-185	J-212	548.28	2.81	0.00	2.24	1.77	1.77
P-421	JC-28	J-183	548.28	3.94	0.00	2.24	1.77	1.77
P-422	J-183	J-185	548.28	2.87	0.00	2.24	1.77	1.77
P-423	JC-29	J-214	550.28	14.41	0.00	2.25	1.78	1.78
P-424	J- 47	J-286	547.58	1.21	0.00	2.24	1.76	1.76
P-425	J-187	JC-35	547.58	1.99	0.00	2.24	1.76	1.76
P-426	J-188	J-187	547.58	3.01	0.00	2.24	1.76	1.76
P-427	J-286	J-287	547.58	0.24	0.00	2.24	1.76	1.76
P-428	J-287	J-188	547.58	0.59	0.00	2.24	1.76	1.76
P-429	J-290	J-420	791.26	35.18	0.00	3.23	3.48	3.48
P-430	J- 58	J-418	46.27	44.92	0.00	1.18	1.57	1.57
P-431	J-120	JW-21	452.35	9.72	0.00	2.89	3.66	3.66
432	J-190	J-192	458.35	5.31	0.00	2.93	3.76	3.76
-433	J-191	J-293	458.35	5.77	0.00	2.93	3.76	3.76
P-434	J-192	J-191	458.35	1.15	0.00	2.93	3.76	3.76
P-435	J-293	J-294	458.35	0.37	0.00	2.93	3.76	3.76
P-436	J-294	JW-20	458.35	7.07	0.00	2.93	3.76	3.76
P-437	J-196	J-193	403.35	7.75	0.00	2.57	2.96	2.96
P-438	J-197	J-196	403.35	9.98	0.00	2.57	2.96	2.96
P-439	J-198	J-197	403.35	7.98	0.00	2.57	2.96	2.96
P-440	J-199	JL-1	55.64	26.11	0.00	1.42	2.21	2.21
P-441	J-200	JL-2	53.64	13.45	0.00	1.37	2.07	2.07
P-442	T- 15	LmbrtBstr	61.00	0.25	0.00	1.56	2.62	2.62
P-443	LmbrtBstr	JL-6	61.00	1.16	0.00	1.56	2.62	2.62
P-444	J-302	J-305	47.64	0.01	0.00	1.22	1.66	1.66
P-445	J-305	T- 15	47.64	7.68	0.00	1.22	1.66	1.66
P-446	J-205	J-295	31.23	1.25	0.00	0.80	0.76	0.76
P-447	J-295	J-297	31.23	0.02	0.00	0.80	0.76	0.76
P-448	J-227	J-228	1119.86	10.99	0.00	3.18	2.73	2.73
P-449	J-228	J-230	1117.86	8.78	0.00	3.17	2.72	2.72
P-450	J-232	J-233	14.00	0.00	0.00	0.36	0.17	0.17
P-451	J-239	JG-2	0.00	0.00	0.00	0.00	0.00	0.00
P-452	JC-26	J-285	534.28	7.66	0.00	2.18	1.68	1.68
P-453	J-116	J- 72	46.27	4.90	0.00	1.18	1.57	1.57
P-454	J-230	JC-31A	1115.86	6.07	0.00	3.17	2.71	2.71
P-455	J-315	J-135	339.88	0.75	0.00	0.96	0.30	0.30
P-456	J-319	J-137	339.88	0.72	0.00	0.96	0.30	0.30
P-457	Intake	J-110	339.88	1.04	0.00	0.96	0.30	0.30
P-458	WTP-HS	J-509	1656.89	0.67	0.00	4.70	5.63	5.63
P-459	J-157	J-344	1642.34	14.53	0.00	4.66	5.54	5.54
P-460	J-322	J-326	1642.34	14.97	0.00	4.66	5.54	5.54
P-461	J-326	J-341	1642.34	9.13	0.00	4.66	5.54	5.54
P-462	J-341	JN-3	1642.34	12.55	0.00	4.66	5.54	5.54
P-463	J-344	J-322	1642.34	11.42	0.00	4.66	5.54	5.54
464	J-345	J-157	1642.34	11.14	0.00	4.66	5.54	5.54
-465	J-361	J-345	1642.34	21.51	0.00	4.66	5.54	5.54
P-466	J-163	J-368	1642.34	0.30	0.00	4.66	5.54	5.54
P-467	J-377	J-361	1642.34	8.10	0.00	4.66	5.54	5.54
P-468	J-364	J-167	1409.95	13.03	0.00	4.00	4.18	4.18
P-469	J-378	J-207	1141.86	36.62	0.00	3.24	2.83	2.83
P-470	J-380	J-395	1405.95	6.62	0.00	3.99	4.15	4.15
P-471	J-394	J-380	1405.95	4.01	0.00	3.99	4.15	4.15
P-472	J-395	T- 2	1405.95	2.65	0.00	3.99	4.15	4.15

P-473	CarneySBSt	J-378	1141.86	9.14	0.00	3.24	2.83	2.83
P-474	I- 3	HrseCrkBst	381.40	18.99	0.00	17.31	317.16	317.16
P-475	HrseCrkBst	JN-4	381.40	35.62	0.00	2.43	2.67	2.67
P-476	J-170	J-372	355.40	3.70	0.00	2.27	2.34	2.34
P-477	J-372	J-398	355.40	4.18	0.00	2.27	2.34	2.34
P-478	J-383	JN-12	361.60	13.72	0.00	2.31	2.42	2.42
P-479	J-398	I- 4	355.40	2.05	0.00	2.27	2.34	2.34
480	I- 4	HrseCrkBst	361.60	0.04	0.00	2.31	2.42	2.42
-481	HrseCrkBst	J-383	361.60	4.25	0.00	2.31	2.42	2.42
P-482	J- 27	J-400	502.60	6.25	0.00	2.05	1.50	1.50
P-483	J-400	J-407	502.60	8.59	0.00	2.05	1.50	1.50
P-484	J-407	J-408	502.60	1.16	0.00	2.05	1.50	1.50
P-485	JC-12	I- 5	498.28	3.38	0.00	2.04	1.48	1.48
P-486	CirJdnBstr	J- 27	502.60	2.49	0.00	2.05	1.50	1.50
P-487	I- 5	CirJdnBstr	502.60	0.05	0.00	2.05	1.50	1.50
P-488	HelCrkBStr	J-108	38.00	0.26	0.00	0.43	0.15	0.15
P-489	2215	2195	2.00	13.55	0.00	0.82	4.00	4.00
P-490	BrsetBstr2	J-118	20.00	0.18	0.00	0.51	0.33	0.33
P-491	SndSprBstr	JS-11	36.26	10.87	0.00	0.93	1.00	1.00
P-492	I- 10	CohagenBst	34.00	0.23	0.00	0.87	0.89	0.89
P-493	RchLmbBst1	JW-7	500.35	9.50	0.00	3.19	4.42	4.42
P-494	WolfPtBstr	JW-33	347.00	3.66	0.00	2.21	2.24	2.24
P-495	J- 86	I- 13	125.14	0.88	0.00	0.80	0.34	0.34
P-496	RchLmbBst2	JR-9	126.87	1.39	0.00	0.81	0.35	0.35
P-497	BlmfldBstr	JBL-4	22.00	0.06	0.00	0.56	0.40	0.40
P-498	J- 72	J- 79	46.27	4.50	0.00	1.18	1.57	1.57
P-499	J- 79	J- 88	46.27	6.05	0.00	1.18	1.57	1.57
P-500	J- 88	J-109	46.27	10.18	0.00	1.18	1.57	1.57
P-501	I- 17	BrsetBstr1	44.01	0.40	0.00	1.12	1.43	1.43
P-502	BrsetBstr1	J-417	48.27	0.58	0.00	1.23	1.70	1.70
P-503	2215	2063	2.00	324.81	0.00	0.82	4.00	4.00
P-504	2062	2073	2.00	10.86	0.00	0.82	4.00	4.00
P-505	J-421	JW-9	494.35	35.95	0.00	3.16	4.32	4.32
P-506	2179	2074	0.00	0.00	0.00	0.00	0.00	0.00
P-507	2185	2155	0.00	0.00	0.00	0.00	0.00	0.00
P-508	JL-7	2452	8.00	7.27	0.00	3.27	52.08	52.08
P-509	JL-35	2062	2.00	0.00	0.00	0.13	0.05	0.05
P-510	JL-15	2233	4.00	3.22	0.00	0.26	0.17	0.17
P-511	J-410	JW-40	310.00	4.12	0.00	1.98	1.82	1.82
512	2233	2215	4.00	42.73	0.00	1.63	14.43	14.43
513	J-509	J-143	1656.89	24.62	0.00	4.70	5.63	5.63
P-514	2090	J-204	2.00	3.16	0.00	0.82	4.00	4.00
P-515	J-424	JW-36	322.00	2.59	0.00	2.06	1.95	1.95
P-516	JW-35	2111	4.00	0.26	0.00	0.26	0.17	0.17
P-517	2090	2092	0.00	0.00	0.00	0.00	0.00	0.00
P-518	J-519	2217	2.00	96.29	1.45	0.82	4.06	4.00
P-519	2094	2099	2.00	4.47	0.00	0.82	4.00	4.00
P-520	2094	2097	0.00	0.00	0.00	0.00	0.00	0.00
P-521	2094	2098	0.00	0.00	0.00	0.00	0.00	0.00
P-522	2099	2090	2.00	8.32	0.00	0.82	4.00	4.00
P-523	2099	2100	0.00	0.00	0.00	0.00	0.00	0.00
P-524	2102	2094	2.00	0.13	0.00	0.13	0.05	0.05
P-525	2102	2103	0.00	0.00	0.00	0.00	0.00	0.00
P-526	2104	2102	2.00	0.36	0.00	0.13	0.05	0.05
P-527	2104	2105	0.00	0.00	0.00	0.00	0.00	0.00
P-528	2105	2106	0.00	0.00	0.00	0.00	0.00	0.00
P-529	2105	2107	0.00	0.00	0.00	0.00	0.00	0.00
P-530	2108	2104	2.00	0.74	0.00	0.13	0.05	0.05
P-531	2108	2110	0.00	0.00	0.00	0.00	0.00	0.00
P-532	2111	2108	2.00	0.24	0.00	0.13	0.05	0.05
P-533	2111	2263	2.00	3.07	0.00	0.82	4.00	4.00
P-534	2569	2119	4.00	33.26	0.00	1.63	14.43	14.43
P-535	J-126	2114	6.00	0.25	0.00	2.45	30.57	30.57
P-536	2114	2264	4.00	23.27	0.00	1.63	14.43	14.43
P-537	J-149	J-531	2.00	0.00	0.00	0.02	0.00	0.00
P-538	RV-3	J- 39	0.00	0.00	0.00	0.00	0.00	0.00
P-539	J-561	J- 42	0.00	0.00	0.00	0.00	0.00	0.00
P-540	J-562	J-561	2.00	0.00	0.00	0.02	0.00	0.00
P-541	J-563	J-562	2.00	0.00	0.00	0.02	0.00	0.00
P-542	J-566	J-563	4.00	0.02	0.00	0.05	0.00	0.00
P-543	J-566	J-567	2.00	3.11	0.00	0.82	4.00	4.00
544	J-568	J-291	8.00	164.67	0.00	3.27	52.08	52.08
545	J-569	J-234	8.00	141.29	0.00	3.27	52.08	52.08
P-546	J-570	J-201	6.00	356.08	0.00	2.45	30.57	30.57
P-547	J-570	J-583	2.00	3.16	0.00	0.82	4.00	4.00
P-548	J-584	J-593	2.00	72.11	0.00	0.82	4.00	4.00
P-549	J-584	J-585	2.00	1.49	0.00	0.82	4.00	4.00
P-550	J-416	J-603	2.00	10.09	0.00	0.82	4.00	4.00
P-551	J-593	J-594	2.00	6.40	0.00	0.82	4.00	4.00
P-552	2119	2112	4.00	117.89	0.00	1.63	14.43	14.43

P-553	2129	2133	0.00	0.00	0.00	0.00	0.00	0.00
P-554	2548	2134	2.00	6.49	0.00	0.82	4.00	4.00
P-555	2381	2222	2.00	17.35	0.00	0.82	4.00	4.00
P-556	2295	2147	0.00	0.00	0.00	0.00	0.00	0.00
P-557	2137	JW-2	0.00	0.00	0.00	0.00	0.00	0.00
P-558	2137	2238	0.00	0.00	0.00	0.00	0.00	0.00
P-559	2137	2139	0.00	0.00	0.00	0.00	0.00	0.00
P-560	2139	2142	0.00	0.00	0.00	0.00	0.00	0.00
P-561	2139	2141	0.00	0.00	0.00	0.00	0.00	0.00
P-562	2142	2140	0.00	0.00	0.00	0.00	0.00	0.00
P-563	2142	2143	0.00	0.00	0.00	0.00	0.00	0.00
P-564	J-502	JN-20	333.16	6.69	0.00	2.13	2.08	2.08
P-565	JN-16	2462	3.44	0.71	0.00	1.41	10.93	10.93
P-566	2145	2149	0.00	0.00	0.00	0.00	0.00	0.00
P-567	2145	2148	0.00	0.00	0.00	0.00	0.00	0.00
P-568	J-421	2240	4.00	0.91	0.00	1.63	14.43	14.43
P-569	2150	2154	0.00	0.00	0.00	0.00	0.00	0.00
P-570	2152	JC-46	0.00	0.00	0.00	0.00	0.00	0.00
P-571	2153	2155	4.00	29.83	0.00	1.63	14.43	14.43
P-572	2155	2273	4.00	35.53	0.00	1.63	14.43	14.43
P-573	2159	2161	2.00	34.69	0.00	0.82	4.00	4.00
P-574	2173	J-535	2.00	30.73	0.00	0.82	4.00	4.00
P-575	J-441	2177	1.16	0.57	0.00	0.08	0.02	0.02
P-576	2174	2173	4.00	7.61	0.00	1.63	14.43	14.43
P-577	2176	2174	4.00	7.74	0.00	1.63	14.43	14.43
P-578	J-542	2176	4.00	39.68	0.00	1.63	14.43	14.43
P-579	J-440	2158	2.00	13.51	0.00	0.82	4.00	4.00
P-580	2344	2180	0.00	0.00	0.00	0.00	0.00	0.00
P-581	2332	2065	0.00	0.00	0.00	0.00	0.00	0.00
P-582	2333	2186	0.00	0.00	0.00	0.00	0.00	0.00
P-583	2184	JC-15	0.00	0.00	0.00	0.00	0.00	0.00
P-584	2342	2189	2.00	22.11	0.00	0.82	4.00	4.00
P-585	2189	2182	2.00	2.08	0.00	0.82	4.00	4.00
P-586	2182	2183	0.00	0.00	0.00	0.00	0.00	0.00
P-587	2182	2181	2.00	28.86	0.00	0.82	4.00	4.00
P-588	2181	2188	0.00	0.00	0.00	0.00	0.00	0.00
P-589	2181	2179	2.00	18.56	0.00	0.82	4.00	4.00
P-590	2193	JC-10	0.00	0.00	0.00	0.00	0.00	0.00
P-591	2192	2196	4.00	155.96	0.00	1.63	14.43	14.43
P-592	2393	2192	4.00	6.86	0.00	1.63	14.43	14.43
P-593	2395	2194	0.00	0.00	0.00	0.00	0.00	0.00
P-594	2398	2198	0.00	0.00	0.00	0.00	0.00	0.00
P-595	2198	2197	0.00	0.00	0.00	0.00	0.00	0.00
P-596	2198	2200	0.00	0.00	0.00	0.00	0.00	0.00
P-597	J-418	J-116	46.27	15.79	0.00	1.18	1.57	1.57
P-598	2204	J-418	0.00	0.00	0.00	0.00	0.00	0.00
P-599	2204	2205	0.00	0.00	0.00	0.00	0.00	0.00
P-600	2204	2207	0.00	0.00	0.00	0.00	0.00	0.00
P-601	2407	2206	0.00	0.00	0.00	0.00	0.00	0.00
P-602	2411	2211	0.00	0.00	0.00	0.00	0.00	0.00
P-603	2211	2209	0.00	0.00	0.00	0.00	0.00	0.00
P-604	2211	2218	0.00	0.00	0.00	0.00	0.00	0.00
P-605	2216	2213	0.00	0.00	0.00	0.00	0.00	0.00
P-606	2216	2219	0.00	0.00	0.00	0.00	0.00	0.00
P-607	2218	2216	0.00	0.00	0.00	0.00	0.00	0.00
P-608	2218	2221	0.00	0.00	0.00	0.00	0.00	0.00
P-609	2221	2220	0.00	0.00	0.00	0.00	0.00	0.00
P-610	2221	2223	0.00	0.00	0.00	0.00	0.00	0.00
P-611	J-507	2426	0.30	0.03	0.00	0.12	0.12	0.12
P-612	JC-7A	2381	4.00	2.16	0.00	1.63	14.43	14.43
P-613	2229	J-706	0.00	0.00	0.00	0.00	0.00	0.00
P-614	2227	J-519	2.00	79.82	0.00	0.82	4.00	4.00
P-615	2217	2228	1.16	0.20	0.00	0.47	1.45	1.45
P-616	2217	2228	0.84	0.20	0.00	0.34	0.81	0.81
P-617	2228	2231	2.00	48.74	0.00	0.82	4.00	4.00
P-618	2230	J-109	0.00	0.00	0.00	0.00	0.00	0.00
P-619	2232	2201	0.00	0.00	0.00	0.00	0.00	0.00
P-620	2232	2234	0.00	0.00	0.00	0.00	0.00	0.00
P-621	2233	2235	0.00	0.00	0.00	0.00	0.00	0.00
P-622	2116	2236	2.00	3.12	0.00	0.82	4.00	4.00
P-623	2237	J-458	5.16	1.24	0.00	0.34	0.27	0.27
P-624	2237	J-468	4.00	1635.21	0.00	1.63	14.43	14.43
P-625	2238	2138	0.00	0.00	0.00	0.00	0.00	0.00
P-626	2238	2241	0.00	0.00	0.00	0.00	0.00	0.00
P-627	2240	2093	2.00	40.97	0.00	0.82	4.00	4.00
P-628	2242	2109	0.00	0.00	0.00	0.00	0.00	0.00
P-629	J-290	J- 8	9.84	0.63	0.00	0.25	0.09	0.09
P-630	J- 8	J-425	2.00	28.63	0.00	0.82	4.00	4.00
P-631	J- 8	J-543	7.84	0.09	0.00	0.20	0.06	0.06
P-632	J-427	J-426	1.00	0.33	0.00	0.41	1.11	1.11

P-633	J-427	J-428	4.84	0.08	0.00	0.12	0.02	0.02
P-634	J-436	2177	0.84	3.77	0.00	0.34	0.80	0.80
P-635	J-428	J-436	4.84	2.31	0.00	0.32	0.24	0.24
P-636	J-410	2284	2.00	4.85	0.00	0.82	4.00	4.00
P-637	2112	2113	2.00	38.81	0.00	0.82	4.00	4.00
P-638	2264	2117	2.00	10.62	0.00	0.82	4.00	4.00
P-639	2115	2267	4.00	23.52	0.00	1.63	14.43	14.43
640	2267	2266	2.00	3.21	0.00	0.82	4.00	4.00
641	J- 91	2270	2.00	0.11	0.00	0.82	4.00	4.00
P-642	2462	J-517	1.44	114.58	0.00	0.59	2.18	2.18
P-643	2146	2271	2.00	8.83	0.00	0.82	4.00	4.00
P-644	2130	2272	2.00	3.20	0.00	0.82	4.00	4.00
P-645	2273	2274	2.00	31.70	0.00	0.82	4.00	4.00
P-646	J-149	J-522	183.98	9.65	0.00	2.09	2.81	2.81
P-647	J-512	J-525	177.42	34.98	0.00	2.01	2.63	2.63
P-648	2452	2191	6.00	5.85	0.00	0.39	0.35	0.35
P-649	J-417	J- 43	46.27	0.36	0.00	1.18	1.57	1.57
P-650	J-417	2227	2.00	0.05	0.00	0.82	4.00	4.00
P-651	JCO-7	2398	4.00	6.58	0.00	1.63	14.43	14.43
P-652	JG-13	2411	4.00	0.25	0.00	1.63	14.43	14.43
P-653	JC-18	2332	2.00	0.06	0.00	0.82	4.00	4.00
P-654	JC-19	2333	2.00	0.08	0.00	0.82	4.00	4.00
P-655	JC-27	2342	6.00	0.37	0.00	2.45	30.57	30.57
P-656	JC-29	2344	2.00	0.43	0.00	0.82	4.00	4.00
P-657	J-420	JC-44	787.26	6.86	0.00	3.22	3.45	3.45
P-658	J-420	2153	2.00	1.15	0.00	0.82	4.00	4.00
P-659	J-420	2153	2.00	1.15	0.00	0.82	4.00	4.00
P-660	2145	JNC-4	0.00	0.00	0.00	0.00	0.00	0.00
P-661	2150	JNC-4	0.00	0.00	0.00	0.00	0.00	0.00
P-662	J-148	JW-12A	482.35	20.26	0.00	3.08	4.13	4.13
P-663	J-148	2129	0.00	0.00	0.00	0.00	0.00	0.00
P-664	JW-10	2548	4.00	0.88	0.00	1.63	14.43	14.43
P-665	J-164	J-503	6.00	35.17	0.00	2.45	30.57	30.57
P-666	J-422	JW-13	474.35	17.60	0.00	3.03	4.00	4.00
P-667	J-422	J-164	6.00	0.24	0.00	2.45	30.57	30.57
P-668	J-423	JW-15	468.35	23.90	0.00	2.99	3.91	3.91
P-669	2242	J-423	0.00	0.00	0.00	0.00	0.00	0.00
P-670	JW-20	2559	4.00	1.05	0.00	1.63	14.43	14.43
P-671	JW-21	2560	5.00	1.19	0.00	2.04	21.81	21.81
672	J-174	2115	6.00	45.99	0.00	2.45	30.57	30.57
673	J-126	J-174	6.00	1.02	0.00	2.45	30.57	30.57
P-674	J-198	2569	6.00	0.44	0.00	2.45	30.57	30.57
P-675	JW-34	2573	6.00	3.50	0.00	2.45	30.57	30.57
P-676	J-424	J-413	4.00	0.00	0.00	0.03	0.00	0.00
P-677	J-441	J-440	2.00	0.14	0.00	0.13	0.05	0.05
P-678	2159	2237	9.16	10.27	0.00	0.60	0.77	0.77
P-679	J-458	J-441	3.16	44.81	0.00	1.29	9.32	9.32
P-680	J-482	2159	11.16	0.41	0.00	0.28	0.11	0.11
P-681	J-468	2239	2.00	221.43	0.00	0.82	4.00	4.00
P-682	J-646	J-482	11.16	0.09	0.00	0.28	0.11	0.11
P-683	JBR-1	J-487	2.00	27.97	0.00	0.82	4.00	4.00
P-684	JCO-2	2393	6.00	4.02	0.00	2.45	30.57	30.57
P-685	2127	2686	2.00	19.23	0.00	0.82	4.00	4.00
P-686	J-503	2127	4.00	69.39	0.00	1.63	14.43	14.43
P-687	2407	JG-1	0.00	0.00	0.00	0.00	0.00	0.00
P-688	JG-1	2407	0.00	0.00	0.00	0.00	0.00	0.00
P-689	JH-16	2426	1.70	0.03	0.00	0.69	2.95	2.95
P-690	J-507	2224	0.00	0.00	0.00	0.00	0.00	0.00
P-691	JH-16	J-507	0.30	0.00	0.00	0.12	0.12	0.12
P-692	J-512	J-516	6.56	0.02	0.00	0.07	0.01	0.01
P-693	J-517	2190	0.00	0.00	0.00	0.00	0.00	0.00
P-694	J-517	J-516	1.44	0.00	0.00	0.02	0.00	0.00
P-695	J-516	2295	8.00	0.12	0.00	0.09	0.01	0.01
P-696	2295	J-534	8.00	0.05	0.00	0.09	0.01	0.01
P-697	J-518	J- 41	2.00	0.00	0.00	0.02	0.00	0.00
P-698	J- 91	JL-16	19.00	0.13	0.00	0.49	0.30	0.30
P-699	J-520	J-703	183.98	15.48	0.00	2.09	2.81	2.81
P-700	J-521	J-526	183.98	7.02	0.00	2.09	2.81	2.81
P-701	J-522	J-520	183.98	1.31	0.00	2.09	2.81	2.81
P-702	J-526	J-528	183.98	18.43	0.00	2.09	2.81	2.81
P-703	J-525	J-159	177.42	18.66	0.00	2.01	2.63	2.63
704	J-528	J-512	183.98	7.37	0.00	2.09	2.81	2.81
705	J-529	J-514	2.00	0.00	0.00	0.02	0.00	0.00
P-706	J-530	J-529	2.00	0.00	0.00	0.02	0.00	0.00
P-707	J-531	J-530	2.00	0.00	0.00	0.02	0.00	0.00
P-708	J-532	J-518	6.00	0.01	0.00	0.07	0.00	0.00
P-709	J-533	J-532	6.00	0.05	0.00	0.07	0.00	0.00
P-710	J-534	J-533	6.00	0.06	0.00	0.07	0.00	0.00
P-711	J-436	J-542	4.00	23.81	0.00	1.63	14.43	14.43
P-712	J-543	J-427	7.84	0.09	0.00	0.20	0.06	0.06

P-713	J-545	J-419	0.00	0.00	0.00	0.00	0.00	0.00
P-714	J-548	J-618	0.00	0.00	0.00	0.00	0.00	0.00
P-715	J-553	J-620	0.00	0.00	0.00	0.00	0.00	0.00
P-716	J-554	J-556	0.00	0.00	0.00	0.00	0.00	0.00
P-717	J-556	J-548	0.00	0.00	0.00	0.00	0.00	0.00
P-718	J-618	J-545	0.00	0.00	0.00	0.00	0.00	0.00
P-719	J-620	J-554	0.00	0.00	0.00	0.00	0.00	0.00
720	J-627	J-553	0.00	0.00	0.00	0.00	0.00	0.00
-721	J-629	J-627	0.00	0.00	0.00	0.00	0.00	0.00
P-722	J-630	J-629	0.00	0.00	0.00	0.00	0.00	0.00
P-723	J-631	J-630	0.00	0.00	0.00	0.00	0.00	0.00
P-724	J-636	J-631	0.00	0.00	0.00	0.00	0.00	0.00
P-725	JH-13	J-638	18.00	0.01	0.00	0.29	0.09	0.09
P-726	JH-11	J-354	14.00	0.23	0.00	0.23	0.06	0.06
P-727	J-354	J-358	14.00	0.07	0.00	0.23	0.06	0.06
P-728	J-647	J-360	11.16	0.36	0.00	0.28	0.11	0.11
P-729	J-360	J-645	11.16	0.20	0.00	0.28	0.11	0.11
P-730	J-645	J-646	11.16	0.13	0.00	0.28	0.11	0.11
P-731	Pump-1	J-647	11.16	0.40	0.00	0.28	0.11	0.11
P-732	Γ- 7	Pump-1	11.16	0.02	0.00	0.28	0.11	0.11
P-733	J-649	J-650	0.00	0.00	0.00	0.00	0.00	0.00
P-734	J-650	J-652	0.00	0.00	0.00	0.00	0.00	0.00
P-735	J-652	J-691	0.00	0.00	0.00	0.00	0.00	0.00
P-736	J-653	J-649	0.00	0.00	0.00	0.00	0.00	0.00
P-737	J-654	J-681	0.00	0.00	0.00	0.00	0.00	0.00
P-738	RV-4	J-666	0.00	0.00	0.00	0.00	0.00	0.00
P-739	J-656	J-657	0.00	0.00	0.00	0.00	0.00	0.00
P-740	J-657	J-658	0.00	0.00	0.00	0.00	0.00	0.00
P-741	J-658	J-659	0.00	0.00	0.00	0.00	0.00	0.00
P-742	J-659	J-509	0.00	0.00	0.00	0.00	0.00	0.00
P-743	J-660	J-661	6.00	6.91	0.00	2.45	30.57	30.57
P-744	J-666	J-656	0.00	0.00	0.00	0.00	0.00	0.00
P-745	J-678	RV-4	0.00	0.00	0.00	0.00	0.00	0.00
P-746	J-681	J-678	0.00	0.00	0.00	0.00	0.00	0.00
P-747	J-683	J-654	0.00	0.00	0.00	0.00	0.00	0.00
P-748	J-691	J-683	0.00	0.00	0.00	0.00	0.00	0.00
P-749	T- 17	J-557	30.08	0.08	0.00	0.77	0.71	0.71
P-750	J-703	J-521	183.98	7.09	0.00	2.09	2.81	2.81
P-751	J-692	J-655	4.26	0.01	0.00	0.11	0.02	0.02
752	J-693	J-692	4.26	0.03	0.00	0.11	0.02	0.02
-753	J-694	J-693	4.26	0.01	0.00	0.11	0.02	0.02
P-754	J-695	J-694	4.26	0.07	0.00	0.11	0.02	0.02
P-755	J-697	J-695	4.26	0.02	0.00	0.11	0.02	0.02
P-756	J-698	J-696	4.26	0.03	0.00	0.11	0.02	0.02
P-757	J-696	J-697	4.26	0.02	0.00	0.11	0.02	0.02
P-758	J-699	J-698	4.26	0.02	0.00	0.11	0.02	0.02
P-759	J-700	J-699	4.26	0.02	0.00	0.11	0.02	0.02
P-760	J-701	J-700	4.26	0.03	0.00	0.11	0.02	0.02
P-761	J-702	J-701	4.26	0.02	0.00	0.11	0.02	0.02
P-762	JS-5	J-702	4.26	0.02	0.00	0.11	0.02	0.02
P-763	J-655	BrsetBstr1	4.26	0.00	0.00	0.11	0.02	0.02
P-764	J-704	J-636	0.00	0.00	0.00	0.00	0.00	0.00
P-765	J-705	J-704	0.00	0.00	0.00	0.00	0.00	0.00
P-766	J-706	J-705	0.00	0.00	0.00	0.00	0.00	0.00
SRVC-267	J-661	2116	4.00	112.78	0.00	1.63	14.43	14.43
SRVC-268	2560	2685	0.00	0.00	0.00	0.00	0.00	0.00
SRVC-274	2121	2202	2.00	3.70	0.00	0.82	4.00	4.00
SRVC-276	2559	2125	2.00	22.14	0.00	0.82	4.00	4.00
SRVC-279	2127	2126	2.00	22.31	0.00	0.82	4.00	4.00
SRVC-362	2199	JS-4	0.00	0.00	0.00	0.00	0.00	0.00
SRVC-435	2573	2262	2.00	77.72	0.00	0.82	4.00	4.00
SRVC-443	2268	2187	2.00	25.92	0.00	0.82	4.00	4.00
SRVC-46	2191	2121	2.00	12.70	0.00	0.82	4.00	4.00
SRVC-517	2686	2130	2.00	3.28	0.00	0.82	4.00	4.00

P U M P/L O S S   E L E M E N T   R E S U L T S

AME	FLOWRATE (gpm)	INLEI HEAD (ft)	OUILEI HEAD (ft)	PUMP HEAD (ft)	EFFIC-ENCY (%)	USEFUL POWER (Hp)	INCREMTL COST ($)	TOTAL COST ($)	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail (ft)
lmfldBstr	22.00	62.00	421.66	359.7	----	-----	---	----	**	**	95.2
rsetBstr1	44.01	76.60	391.22	314.6	----	-----	---	----	**	**	109.8
rsetBstr2	20.00	85.93	382.65	296.7	----	-----	---	----	**	**	119.1
arneySBSt	1141.86	69.57	589.28	519.7	----	-----	---	----	**	**	102.6
irJdnBstr	502.60	85.95	282.74	196.8	----	-----	---	----	**	**	119.1

CohagenBst	34.00	59.77	117.95	58.2	----	-----	---	----	**	**	93 0
FloWelBstr	807.10	72.51	440.15	367 6	----	-----	---	----	**	**	105 5
HelCrkBStr	38 00	102 99	623 55	520 6	----	-----	---	----	**	**	136.2
HrseCrkBst	381.40	136.01	499 06	363 1	----	-----	---	----	**	**	164.6
HrseCrkBst	361 60	86.96	360.48	273 5	----	-----	---	----	**	**	120.1
Intake	339 88	-50 31	240 70	291 0	----	-----	---	----	**	**	-17.1
LmbrtBstr	61 00	45.75	175.46	129 7	----	-----	---	----	**	**	78.9
p-1	11.16	307.98	662.51	354.5	----	-----	---	----	**	**	341 2
RchLmbBst1	500 35	73 95	548.37	474.4	----	-----	---	----	**	**	107 0
RchLmbBst2	126 87	59.99	293 86	233 9	----	-----	---	----	**	**	93 2
SndSprBstr	36 26	90.80	418 15	327 4	----	-----	---	----	**	**	124.0
WolfPtBstr	347.00	83.73	254.75	171.0	----	-----	---	----	**	**	116.9
WIP-HS	1656 89	19 89	437 75	417.9	----	-----	---	----	**	**	52.7

E N D   N O D E   R E S U L T S

NODE NAME	NODE TITLE	EXTERNAL DEMAND (gpm)	HYDRAULIC GRADE (ft)	NODE ELEVATION (ft)	PRESSURE HEAD (ft)	NODE PRESSURE (psi)
2062		0.00	2607.68	2365.35	242 33	105 01
2063		2.00	2237.60	2247.57	-9 97	-4 32
2065		0 00	2661 74	2528 44	133.30	57 76
2073		2 00	2596 82	2403 57	193.25	83.74
2074		0 00	2668 29	2552.13	116.16	50.34
2090		0.00	2617.73	2302.00	315 73	136.82
2092		0 00	2617.73	2223.03	394 70	171.04
2093		2 00	2926 90	2493 47	433.43	187 82
2094		0.00	2630 51	2343 89	286.62	124.20
2097		0.00	2630.51	2330.28	300 24	130.10
2098		0 00	2630.51	2368.20	262 31	113.67
2099		0 00	2626.04	2304.39	321 65	139 38
2100		0.00	2626 04	2322 47	303.58	131 55
2102		0.00	2630.64	2416.07	214.57	92 98
2103		0.00	2630.64	2383.39	247 25	107.14
2104		0 00	2631.00	2363.68	267 32	115.84
2105		0.00	2631 00	2258 36	372 64	161.48
2106		0.00	2631 00	2205 38	425.62	184 44
2107		0.00	2631.00	2282.38	348.62	151.07
2108		0.00	2631.74	2359.08	272 65	118.15
2109		0 00	2800.54	2358.13	442 41	191.71
2110		0.00	2631.74	2320 30	311.43	134.95
2111		0.00	2631 98	2442 25	189.73	82 21
2112		2 00	2386.44	2397.53	-11.09	-4 81
2113		2.00	2347.63	2332.41	15.22	6 60
2114		2.00	2586 51	2472.67	113.85	49 33
2115		2.00	2539 75	2480.44	59 31	25.70
2116		2.00	2485.81	2432.97	52 84	22.90
2117		2 00	2552.63	2451 44	101.19	43.85
2119		0 00	2504.33	2268.47	235.87	102.21
2121		0 00	2646.11	2511.81	134.31	58 20
2125		2.00	2638 35	2329.56	308 79	133 81
2126		2.00	2723 27	2588.22	135.05	58 52
2127		0 00	2745 58	2603 01	142 57	61.78
2129		0 00	2878.58	2467 68	410.90	178.06
2130		0.00	2723.07	2546.55	176.52	76.49
2133		0.00	2878 58	2438.02	440.56	190 91
2134		2 00	2892 24	2438.22	454.02	196 74
2137		0 00	2717 66	2432 67	284 99	123 49
2138		0 00	2717.66	2443 53	274 13	118 79
2139		0.00	2717.66	2421.98	295 68	128.13
2140		0.00	2717 66	2480.74	236.92	102.67
2141		0 00	2717 66	2426.60	291.06	126 12
2142		0 00	2717.66	2426 37	291 29	126 22
2143		0.00	2717.66	2418.30	299 36	129 72
2145		0.00	2949.06	2829.92	119.15	51.63
2146		0 00	2891 19	2558.26	332.93	144.27
2147		0 00	2797.79	2288.02	509.77	220.90
2148		0.00	2949.06	2819 48	129.58	56 15
2149		0 00	2949 06	2812.49	136 57	59 18
2150		0.00	2949 06	2749.67	199.40	86.41
2152		0.00	2973.45	2714.56	258.89	112.19
2153		0.00	3026.67	2661 02	365.65	158.45
2154		0 00	2949.06	2722.07	226 99	98 36
2155		0.00	2996 84	2728.44	268 40	116.31
2158		2.00	3042 95	3207.70	-164.76	-71.39
2159		0.00	3112.91	2843.27	269.65	116.85
2161		2 00	3078.22	2670.30	407.92	176 77

2163	2.00	2883.91	2689.89	194.02	84.07
2173	2.00	2980.96	2782.67	198.29	85.92
2174	0.00	2988.56	2751.27	237.29	102.83
2176	0.00	2996.31	2760.85	235.46	102.03
2177	2.00	3056.02	2816.27	239.76	103.89
2179	2.00	2668.29	2337.63	330.66	143.29
2180	0.00	2787.04	2427.85	359.19	155.65
2181	0.00	2686.85	2293.53	393.32	170.44
2182	0.00	2715.71	2350.09	365.62	158.43
2183	0.00	2715.71	2387.23	328.48	142.34
2184	0.00	2640.06	2611.05	29.01	12.57
2185	0.00	2996.84	2735.00	261.84	113.46
2186	0.00	2665.17	2771.35	-106.18	-46.01
2187	2.00	2632.02	2274.96	357.06	154.72
2188	0.00	2686.85	2400.13	286.72	124.25
2189	0.00	2717.79	2361.64	356.15	154.33
2190	0.00	2797.91	2574.93	222.99	96.63
2191	0.00	2658.81	2419.16	239.66	103.85
2192	0.00	3088.68	2758.79	329.89	142.95
2193	0.00	2797.07	2558.95	238.12	103.18
2194	0.00	3100.37	2864.13	236.24	102.37
2195	2.00	2548.86	2423.68	125.18	54.24
2196	4.00	2932.72	2676.04	256.68	111.23
2197	0.00	3104.97	2861.15	243.82	105.66
2198	0.00	3104.97	2872.93	232.04	100.55
2199	0.00	3251.16	3237.20	13.96	6.05
2200	0.00	3104.97	2958.36	146.61	63.53
2201	0.00	3250.99	3122.34	128.66	55.75
2202	2.00	2642.41	2549.34	93.07	40.33
2204	0.00	3193.71	2872.57	321.15	139.16
2205	0.00	3193.71	2893.01	300.71	130.31
2206	0.00	3445.35	2868.96	576.39	249.77
2207	0.00	3193.71	2780.64	413.07	179.00
2209	0.00	3151.09	3342.12	-191.03	-82.78
2211	0.00	3151.09	3300.81	-149.72	-64.88
2213	0.00	3151.09	3258.79	-107.70	-46.67
2215	0.00	2562.41	2372.21	190.21	82.42
2216	0.00	3151.09	3263.41	-112.32	-48.67
2217	0.00	3073.02	2937.00	136.02	58.94
2218	0.00	3151.09	3367.38	-216.29	-93.73
2219	0.00	3151.09	3188.71	-37.62	-16.30
2220	0.00	3151.09	3012.79	138.30	59.93
2221	0.00	3151.09	3061.25	89.84	38.93
2222	2.00	2762.00	2551.57	210.43	91.19
2223	0.00	3151.09	2959.38	191.71	83.08
2224	0.00	3234.39	2834.80	399.59	173.15
2227	0.00	3250.59	2884.51	366.08	158.63
2228	0.00	3072.82	2900.88	171.94	74.51
2229	0.00	3231.44	2529.42	702.01	304.21
2230	0.00	3152.29	2764.86	387.43	167.89
2231	2.00	3024.08	2313.28	710.79	308.01
2232	0.00	3250.99	3204.75	46.24	20.04
2233	0.00	2605.15	2347.30	257.84	111.73
2234	0.00	3250.99	2973.19	277.81	120.38
2235	0.00	2605.15	2228.54	376.61	163.20
2236	2.00	2482.68	2419.38	63.30	27.43
2237	0.00	3102.64	3309.77	-207.13	-89.76
2238	0.00	2717.66	2511.41	206.25	89.37
2239	2.00	1246.00	2898.71	-1652.71	-716.18
2240	2.00	2967.87	2451.01	516.86	223.97
2241	0.00	2717.66	2707.38	10.28	4.46
2242	0.00	2800.54	2461.97	338.57	146.71
2262	2.00	2572.75	2344.35	228.40	98.97
2263	2.00	2628.91	2336.02	292.89	126.92
2264	2.00	2563.25	2386.97	176.28	76.39
2266	2.00	2513.02	2409.18	103.84	45.00
2267	2.00	2516.23	2406.33	109.90	47.62
2268	2.00	2657.94	2459.71	198.23	85.90
2270	2.00	2607.75	2382.97	224.78	97.41
2271	2.00	2882.36	2595.99	286.37	124.09
2272	2.00	2719.87	2507.93	211.93	91.84
2273	2.00	2961.31	2761.94	199.37	86.39
2274	2.00	2929.60	2741.27	188.34	81.61
2284	2.00	2539.53	2260.23	279.30	121.03
2295	0.00	2797.79	2310.66	487.13	211.09
2332	2.00	2661.74	2473.52	188.22	81.56
2333	2.00	2665.17	2464.14	201.04	87.12
2342	4.00	2739.91	2405.01	334.89	145.12
2344	2.00	2787.04	2715.02	72.02	31.21
2381	2.00	2779.35	2661.84	117.51	50.92

2393		2.00	3095.54	2753.34	342.20	148.29
2395		4.00	3100.37	2766.00	334.37	144.89
2398		4.00	3104.97	3000.88	104.09	45.11
2407		0.00	3445.35	2882.28	563.07	244.00
2411		4.00	3151.09	2976.01	175.08	75.87
2426		2.00	3234.36	2833.85	400.51	173.55
2452		2.00	2664.67	2399.80	264.87	114.78
2462		2.00	2912.49	2576.70	335.79	145.51
2548		2.00	2898.73	2594.55	304.18	131.81
2559		2.00	2660.48	2374.80	285.69	123.80
2560		5.00	2641.05	2446.55	194.50	84.28
2569		2.00	2537.59	2309.67	227.92	98.76
2573		4.00	2650.47	2456.62	193.85	84.00
2685		0.00	2641.05	2430.01	211.03	91.45
2686		0.00	2726.35	2600.65	125.70	54.47
BlmfldBstr		0.00	3002.66	2581.00	421.66	182.72
BrsetBstr1		0.00	2936.60	2860.00	76.60	33.19
BrsetBstr2		0.00	3150.93	3065.00	85.93	37.24
CarneySBSt		0.00	3033.28	2444.00	589.28	255.36
CirJdnBstr		0.00	2625.95	2540.00	85.95	37.25
CohagenBst		0.00	3117.95	3000.00	117.95	51.11
FloWelBstr		0.00	3129.15	2689.00	440.15	190.73
HelCrkBStr		0.00	2722.99	2620.00	102.99	44.63
HrseCrkBst		0.00	2905.06	2406.00	499.06	216.26
HrseCrkBst		0.00	3020.48	2660.00	360.48	156.21
Intake		0.00	2540.70	2300.00	240.70	104.30
J- 1		0.00	2608.99	2566.00	42.99	18.63
J- 2		0.00	2609.03	2566.53	42.50	18.41
J- 3		0.00	2599.75	2395.52	204.23	88.50
J- 7		0.00	3242.81	2716.79	526.02	227.94
J- 8		0.00	3062.37	2750.00	312.37	135.36
J- 12		0.00	2798.38	2437.00	361.38	156.60
J- 14		0.00	2593.74	2376.88	216.86	93.97
J- 15		0.00	2585.27	2303.28	281.99	122.20
J- 16		0.00	2566.84	2338.54	228.30	98.93
J- 20		0.00	2531.46	2239.72	291.75	126.42
J- 21		0.00	2533.23	2282.00	251.23	108.87
J- 22		0.00	2461.61	2319.98	141.63	61.37
J- 27		0.00	2820.25	2600.00	220.25	95.44
J- 37		0.00	3236.15	2800.00	436.15	189.00
J- 39		2.00	2797.57	2084.00	713.57	309.22
J- 40		2.00	2785.50	2050.00	735.50	318.72
J- 41		0.00	2797.62	2140.00	657.62	284.97
J- 42	Community Ha	0.00	2285.28	2024.00	261.28	113.22
J- 43		0.00	3250.28	2877.00	373.28	161.75
J- 44		0.00	2926.96	2840.00	86.96	37.68
J- 45		0.00	2285.32	1968.00	317.32	137.50
J- 47		0.00	2815.47	2540.00	275.47	119.37
J- 58		0.00	3238.63	3040.00	198.63	86.07
J- 61		0.00	2669.24	2446.26	222.98	96.63
J- 71		0.00	2668.28	2442.22	226.05	97.96
J- 72		0.00	3173.03	2966.00	207.03	89.71
J- 73		0.00	2991.46	2926.00	65.46	28.37
J- 74		0.00	3001.33	2611.08	390.25	169.11
J- 75		0.00	3001.23	2611.00	390.23	169.10
J- 76		0.00	3000.24	2596.87	403.36	174.79
J- 77		0.00	3000.02	2596.00	404.02	175.08
J- 78		0.00	2671.67	2372.56	299.12	129.62
J- 79		0.00	3168.53	2938.00	230.53	99.90
J- 80		0.00	2789.85	2200.00	589.85	255.60
J- 81		0.00	2607.68	2377.00	230.68	99.96
J- 83	Maniage Spri	0.00	2830.09	2686.00	144.09	62.44
J- 84		0.00	2285.28	2238.00	47.28	20.49
J- 85		0.00	2730.31	2690.00	40.31	17.47
J- 86		0.00	2460.88	2329.49	131.39	56.94
J- 87		0.00	2856.94	2548.00	308.94	133.87
J- 88		0.00	3162.47	3041.00	121.47	52.64
J- 89		0.00	2928.24	2900.00	28.24	12.24
J- 91		0.00	2607.86	2397.19	210.66	91.29
J- 98		0.00	2664.07	2493.62	170.45	73.86
J-101		0.00	2712.78	2421.00	291.78	126.44
J-103		0.00	2712.78	2437.66	275.11	119.22
J-104		0.00	2532.84	2340.00	192.84	83.56
J-108		0.00	3243.29	2682.97	560.32	242.80
J-109	Brusett Chur	2.00	3152.29	3012.91	139.38	60.40
J-110		0.00	2539.66	2351.00	188.66	81.75
J-114		0.00	2533.45	2340.00	193.45	83.83
J-115		0.00	2532.42	2340.00	192.42	83.38
J-116		0.00	3177.93	2914.00	263.93	114.37
J-117		0.00	3447.01	2978.00	469.01	203.24

J-118	0.00	3447.48	3000.00	447.48	193.91
J-119	0.00	3068.36	2807.19	261.17	113.18
J-120	0.00	2651.96	2415.00	236.96	102.68
J-121	0.00	2902.20	2655.00	247.20	107.12
J-122	0.00	2901.71	2655.88	245.83	106.52
J-123	0.00	2737.66	2422.38	315.28	136.62
J-124	0.00	2738.07	2422.00	316.07	136.96
-125	0.00	2786.84	2422.00	364.84	158.10
J-126	0.00	2586.77	2466.07	120.70	52.30
J-127	0.00	2587.52	2466.00	121.52	52.66
J-128	0.00	2285.32			
J-129	0.00	2997.04	2686.68	310.36	134.49
J-130	0.00	2997.00	2686.00	311.00	134.77
J-131	0.00	2664.02	2500.00	164.02	71.07
J-133	5.00	2285.43	2054.53	230.90	100.06
J-134	0.00	2538.51	2369.00	169.51	73.46
J-135	0.00	2536.56	2370.00	166.56	72.18
J-137	2.00	2534.25	2405.00	129.25	56.01
J-138	0.00	2917.73	2500.00	417.73	181.02
J-143	0.00	2922.46	2540.00	382.46	165.73
J-145	2.00	2853.90	2361.00	492.90	213.59
J-147	0.00	2823.88	2418.00	405.88	175.88
J-148	0.00	2878.58	2457.38	421.20	182.52
J-149	0.00	2864.28	2361.00	503.28	218.09
J-151	0.00	2815.56	2500.00	315.56	136.74
J-153	4.00	2804.53	2538.00	266.53	115.50
J-155	0.00	2790.30	2500.00	290.30	125.80
J-157	0.00	2624.26	2500.00	124.26	53.85
J-159	0.00	2744.30	2383.00	361.30	156.56
J-161	0.00	2715.08	2312.00	403.08	174.67
J-163	0.00	2665.59	2368.00	297.59	128.96
J-164	0.00	2850.14	2476.54	373.60	161.89
J-165	2.00	2538.37	2304.00	234.37	101.56
J-167	2.00	2548.56	2380.00	168.56	73.04
J-170	0.00	2756.93	2610.55	146.38	63.43
J-171	2.00	187.05	2010.00	-1822.95	-789.94
J-173	0.00	3242.45	2721.84	520.61	225.60
J-174	0.00	2585.74	2461.71	124.04	53.75
J-176	0.00	3242.06	2691.44	550.63	238.60
J-177	0.00	3237.70	2773.54	464.16	201.14
J-179	0.00	3236.62	2760.00	476.62	206.54
J-181	0.00	2829.67	2364.65	465.02	201.51
J-182	0.00	2770.84	2650.00	120.84	52.36
J-183	0.00	2753.53	2433.10	320.42	138.85
J-185	0.00	2750.66	2440.00	310.66	134.62
J-187	0.00	2810.43	2600.00	210.43	91.18
J-188	0.00	2813.44	2580.00	233.44	101.16
J-190	0.00	2681.21	2346.00	335.21	145.26
J-191	0.00	2674.75	2326.41	348.35	150.95
J-192	0.00	2675.90	2317.35	358.55	155.37
J-193	0.00	2512.31	2366.13	146.19	63.35
J-196	0.00	2520.07	2354.94	165.12	71.55
J-197	0.00	2530.04	2349.17	180.87	78.38
J-198	0.00	2538.03	2309.09	228.94	99.21
J-199	0.00	2659.48	2485.00	174.48	75.61
J-200	0.00	2619.54	2441.89	177.64	76.98
J-201	0.00	284.67	2014.00	-1729.33	-749.37
J-204	2.00	2614.56	2300.00	314.56	136.31
J-205	0.00	2645.30	2494.70	150.60	65.26
J-207	2.00	2987.52	2657.00	330.52	143.23
J-209	2.00	2961.02	2562.00	399.02	172.91
J-210	0.00	2767.57	2600.00	167.57	72.61
J-211	0.00	2767.70	2600.00	167.70	72.67
J-212	0.00	2747.85	2400.00	347.85	150.73
J-214	0.00	2773.06	2640.63	132.43	57.39
J-216	0.00	2766.02	2590.02	176.00	76.27
J-217	2.00	2949.49	2556.00	393.49	170.51
J-218	0.00	2928.32	2541.00	387.32	167.84
J-219	2.00	2906.26	2411.00	495.26	214.61
J-220	2.00	2900.59	2440.00	460.59	199.59
J-221	2.00	2902.96	2440.00	462.96	200.61
J-222	2.00	2886.04	2535.00	351.04	152.12
J-223	4.00	2878.00	2539.00	339.00	146.90
J-226	2.00	2860.21	2496.00	364.21	157.83
J-227	2.00	2857.43	2495.00	362.43	157.05
J-228	2.00	2846.45	2486.00	360.45	156.19
J-230	2.00	2837.67	2473.00	364.67	158.02
J-232	0.00	3446.20	3113.00	333.20	144.39
J-233	0.00	3446.20	3113.00	333.20	144.39
J-234	0.00	1933.28	2118.00	-184.72	-80.05

J-235	2 00	2788.52	2200 00	588 52	255.03
J-236	0.00	2925 44	2773 60	151 84	65.80
J-237	0.00	2925 61	2773 00	152 61	66.13
J-239	0 00	3445 35	2900 00	545.35	236.32
J-241	0 00	2829 66	2364.00	465.66	201.79
J-242	0 00	3230.91	2846.00	384.91	166 80
J-246	0.00	3236.23	2780 00	456 23	197 70
-249	0.00	3236.22	2780 00	456 22	197 70
J-251	0.00	2730.81	2631 00	99 81	43 25
J-252	0 00	2730 74	2631 00	99 74	43 22
J-254	0.00	2411 03			
J-273	0 00	2730 45	2631.71	98.74	42 79
J-278	0 00	2759.81	2651.42	108.39	46.97
J-281	0.00	2759.87	2651.00	108.87	47.18
J-284	0.00	2725.85	2500.00	225.85	97.87
J-285	0.00	2725.91	2500.00	225.91	97.90
J-286	0 00	2814.27	2560 00	254 27	110.18
J-287	0 00	2814 03	2560 00	254.03	110.08
J-288	0.00	3063 94	2809 00	254 94	110 48
J-290	0.00	3063 00	2809.00	254 00	110 07
J-291	0.00	2080.00			
J-292	0.00	2642.66	2414.93	227.73	98 68
J-293	0 00	2668.98	2360 00	308.98	133 89
J-294	0 00	2668.61	2360.00	308.61	133 73
J-295	0 00	2644.05	2540 00	104 05	45 09
J-297	0.00	2644.03	2540 00	104.03	45 08
J-302	0.00	2577 69	2345 10	232.59	100 79
J-305	0.00	2577 68	2345 00	232.68	100 83
J-313	0.00	2531 75	2239 00	292.75	126.86
J-315	0.00	2537.31	2470 00	67.31	29.17
J-319	0 00	2534.98	2360.00	174.98	75.82
J-322	0.00	2598.32	2465.00	133 32	57.77
J-326	0.00	2583.35	2452.00	131 35	56.92
J-341	0.00	2574.22	2400.00	174 22	75 50
J-344	0.00	2609.73	2509.00	100 73	43.65
J-345	0.00	2635 40	2446.00	189 40	82.07
J-354	0 00	3231 82	2764 02	467.79	202 71
J-358	0 00	3231.75	2784 65	447.09	193 74
J-360	0 00	3113.74	2662 00	451.74	195 76
-361	0.00	2656.91	2425.00	231.91	100 50
J-364	0.00	2561.59	2377.00	184.59	79 99
J-368	0 00	2665.29	2368.00	297.29	128 83
J-372	0.00	2753.23	2616.03	137.20	59 45
J-377	0 00	2665 01	2368.00	297 01	128.70
J-378	0 00	3024 14	2488.00	536.14	232.33
J-380	0 00	2523 27	2400.00	123 27	53 42
J-383	0 00	3016.23	2688 00	328 23	142.23
J-394	0.00	2527 28	2340 00	187 28	81 16
J-395	0.00	2516 65	2420 00	96 65	41 88
J-398	0.00	2749 05	2620 00	129 05	55 92
J-400	0.00	2814 00	2596.19	217 82	94 39
J-407	0.00	2805.41	2628 30	177 12	76 75
J-408	0.00	2804 26	2618 88	185 37	80 33
J-410	0.00	2544.38	2306 33	238 05	103 15
J-413	2.00	2577.64	2300 00	277 64	120.31
J-416	0.00	2558.15	2344.00	214 15	92.80
J-417	0 00	3250.64			
J-418	0 00	3193 71	2894.00	299 71	129.88
J-419	0 00	3231 44	2827.00	404.44	175 26
J-420	0.00	3027 82	2660.34	367.48	159 24
J-421	0 00	2968 78	2450.39	518.39	224.64
J-422	0.00	2850 37	2498.28	352.09	152.57
J-423	0.00	2800 54	2461 34	339.20	146.98
J-424	0.00	2577.64	2300 00	277.64	120.31
J-425	2 00	3033.75	2600 00	433.75	187 96
J-426	1 00	3061.86	2700.00	361 86	156 81
J-427	2.00	3062.19	2685.00	377 19	163 45
J-428	0.00	3062.11	2644.00	418 11	181 18
J-436	0.00	3059 80	2783.00	276 80	119 95
J-440	0.00	3056.46	3016.14	40.32	17 47
J-441	0.00	3056 59	3006.00	50.59	21 92
J-458	2 00	3101.40	3093.00	8.40	3 64
J-468	2 00	1467.43	2885.30	-1417.87	-614 41
J-482	0 00	3113.33	2737.00	376.33	163.07
J-487	2.00	2892.30	2589 00	303.30	131 43
J-502	2.00	2881.40	2570.00	311.40	134.94
J-503	2.00	2814.97	2472.21	342 76	148.53
J-507	0 00	3234.39	2836.97	397 42	172.22
J-509	0 00	2947 07	2510.00	437 07	189.40
J-512	0 00	2797 93	2560.00	237 93	103 10

J-514	2.00	2864.28	2300.00	564.28	244.52
J-516	0.00	2797.91	2491.00	306.91	132.99
J-517	0.00	2797.91	2563.58	234.34	101.55
J-518	0.00	2797.62	2020.00	777.62	336.97
J-519	0.00	3170.77			
J-520	0.00	2853.32	2420.00	433.32	187.77
J-521	0.00	2830.76	2755.00	75.76	32.83
J-522	0.00	2854.63	2410.00	444.63	192.67
J-525	0.00	2762.95	2590.00	172.95	74.95
J-526	0.00	2823.74	2639.00	184.74	80.05
J-528	0.00	2805.30	2662.00	143.30	62.10
J-529	0.00	2864.28	2300.00	564.28	244.52
J-530	0.00	2864.28	2350.00	514.28	222.85
J-531	0.00	2864.28	2350.00	514.28	222.86
J-532	0.00	2797.63	2057.00	740.63	320.94
J-533	0.00	2797.69	2126.00	671.69	291.06
J-534	2.00	2797.74	2310.00	487.74	211.36
J-535	0.00	2950.23	3001.73	-51.50	-22.32
J-542	0.00	3035.99	2776.00	259.99	112.66
J-543	0.00	3062.28	2760.00	302.28	130.99
J-545	0.00	3231.44	2893.66	337.78	146.37
J-548	0.00	3231.44	2828.73	402.70	174.50
J-553	0.00	3231.44	2833.36	398.08	172.50
J-554	0.00	3231.44	2807.44	424.00	183.73
J-556	0.00	3231.44	2837.36	394.07	170.77
J-557	0.00	2936.92			
J-561	2.00	2285.28	2030.00	255.28	110.62
J-562	0.00	2285.29	1989.00	296.29	128.39
J-563	2.00	2285.29	1984.00	301.29	130.56
J-566	2.00	2285.31	1990.00	295.31	127.97
J-567	2.00	2282.20	2000.00	282.20	122.28
J-568	2.00	2244.67	2174.00	70.67	30.62
J-569	0.00	2074.56	2150.00	-75.44	-32.69
J-570	0.00	640.75	2104.00	-1463.25	-634.07
J-583	2.00	637.59	2100.00	-1462.41	-633.71
J-584	0.00	209.99	2013.00	-1803.01	-781.31
J-585	2.00	208.50	2013.00	-1804.50	-781.95
J-593	0.00	137.87	2210.00	-2072.13	-897.92
J-594	2.00	131.47	2200.00	-2068.53	-896.36
J-603	2.00	2548.07	2160.00	388.07	168.16
J-618	0.00	3231.44	2849.01	382.43	165.72
J-620	0.00	3231.44	2829.39	402.05	174.22
J-627	0.00	3231.44	2800.55	430.89	186.72
J-629	0.00	3231.44	2849.86	381.57	165.35
J-630	0.00	3231.44	2770.73	460.71	199.64
J-631	0.00	3231.44	2777.52	453.92	196.70
J-636	0.00	3231.44	2848.22	383.21	166.06
J-638	0.00	3232.69	2791.44	441.25	191.21
J-645	0.00	3113.55	2736.00	377.55	163.60
J-646	0.00	3113.42	2763.00	350.42	151.85
J-647	0.00	3114.11	2581.00	533.11	231.01
J-649	0.00	2797.62	2180.00	617.62	267.63
J-650	0.00	2797.62	2070.00	727.62	315.30
J-652	0.00	2797.62	2231.00	566.62	245.53
J-653	0.00	2797.62	2260.00	537.62	232.97
J-654	0.00	2797.62	2304.00	493.62	213.90
J-655	0.00	3251.22	2860.00	391.22	169.53
J-656	0.00	2947.07	2548.00	399.07	172.93
J-657	0.00	2947.07	2550.00	397.07	172.06
J-658	0.00	2947.07	2656.00	291.07	126.13
J-659	0.00	2947.07	2489.00	458.07	198.50
J-660	0.00	2605.49	2443.63	161.86	70.14
J-661	2.00	2598.58	2442.48	156.10	67.64
J-666	0.00	2947.07	2595.00	352.07	152.56
J-678	0.00	2797.62	2393.00	404.62	175.33
J-681	0.00	2797.62	2316.00	481.62	208.70
J-683	0.00	2797.62	2183.00	614.62	266.33
J-691	0.00	2797.62	2154.00	643.62	278.90
J-692	0.00	3251.24	2900.00	351.24	152.20
J-693	0.00	3251.26	3000.00	251.26	108.88
J-694	0.00	3251.27	3052.00	199.27	86.35
J-695	0.00	3251.34	3108.00	143.34	62.11
J-696	0.00	3251.37	3195.00	56.37	24.43
J-697	0.00	3251.36	3103.00	148.36	64.29
J-698	0.00	3251.41	3048.00	203.41	88.14
J-699	0.00	3251.42	3032.00	219.42	95.08
J-700	0.00	3251.44	3000.00	251.44	108.96
J-701	0.00	3251.47	3144.00	107.47	46.57
J-702	0.00	3251.49	3011.00	240.49	104.21
J-703	0.00	2837.84	2534.00	303.84	131.66

J-704		0.00	3231.44	2639.07	592.37	256.69
J-705		0.00	3231.44	2667.58	563.86	244.34
J-706		0.00	3231.44	2620.40	611.04	264.78
JBL-1		1.00	2651.05	2534.10	116.95	50.68
JBL-10		1.00	2993.06	2894.37	98.69	42.76
JBL-11		0.00	2992.62	2900.00	92.62	40.14
JBL-12		0.00	2992.25	2884.01	108.25	46.91
JBL-13		1.00	2989.86	2759.60	230.27	99.78
JBL-14		1.00	2988.41	2718.04	270.37	117.16
JBL-15		1.00	2987.59	2744.87	242.72	105.18
JBL-16		1.00	2987.11	2761.53	225.58	97.75
JBL-17		1.00	2986.63	2779.50	207.13	89.76
JBL-18		1.00	2985.22	2701.38	283.84	123.00
JBL-2		1.00	2645.66	2497.75	147.91	64.09
JBL-20		1.00	2984.58	2685.50	299.08	129.60
JBL-21		3.00	2984.45	2673.50	310.95	134.75
JBL-22		1.00	2984.19	2734.93	249.26	108.01
JBL-23		1.00	2984.07	2682.65	301.43	130.62
JBL-24		1.00	2984.00	2646.86	337.14	146.09
JBL-25		0.00	2983.88	2711.25	272.63	118.14
JBL-26		0.00	2983.81	2718.53	265.28	114.95
JBL-27		1.00	2983.70	2665.56	318.14	137.86
JBL-28	Bloomfield	5.00	2983.64	2613.18	370.47	160.54
JBL-4		0.00	3002.60	2581.00	421.60	182.69
JBL-5		0.00	3001.84	2539.74	462.11	200.25
JBL-7A		1.00	2998.27	2652.50	345.77	149.83
JBL-9		1.00	2995.88	2796.53	199.35	86.39
JBR-1		46.00	2920.26	2592.81	327.46	141.90
JC-1		2.00	2734.65	2601.86	132.79	57.54
JC-10		2.00	2797.07	2625.90	171.16	74.17
JC-11		2.00	2802.78	2624.00	178.78	77.47
JC-12		2.00	2629.38	2496.60	132.78	57.54
JC-13		2.00	2634.70	2449.44	185.26	80.28
JC-15		2.00	2640.06	2538.52	101.54	44.00
JC-16		2.00	2648.95	2519.86	129.09	55.94
JC-17		2.00	2652.22	2487.03	165.20	71.59
JC-18		2.00	2661.80	2472.89	188.91	81.86
JC-19		2.00	2665.25	2463.51	201.74	87.42
JC-2		2.00	2738.23	2593.89	144.34	62.55
JC-20		2.00	2666.17	2479.48	186.69	80.90
JC-21		6.00	2677.70	2480.11	197.59	85.62
JC-22		2.00	2691.24	2449.80	241.44	104.63
JC-23		2.00	2706.59	2422.80	283.79	122.98
JC-24		2.00	2708.57	2438.84	269.73	116.88
JC-25		4.00	2716.29	2464.17	252.12	109.25
JC-26		4.00	2733.57	2529.04	204.53	88.63
JC-27		4.00	2740.28	2404.40	335.87	145.55
JC-28		2.00	2757.47	2487.13	270.34	117.15
JC-29		2.00	2787.47	2714.33	73.14	31.69
JC-3		2.00	2749.45	2582.00	167.45	72.56
JC-30		4.00	2810.69	2615.73	194.95	84.48
JC-31		2.00	2824.82	2557.15	267.67	115.99
JC-31A	Flowing Well	4.00	2831.60	2468.86	362.74	157.19
JC-32		2.00	2828.68	2451.31	377.38	163.53
JC-33		0.00	2822.33	2468.59	353.74	153.29
JC-34		2.00	2818.15	2492.21	325.94	141.24
JC-35		0.00	2808.43	2643.38	165.05	71.52
JC-36		2.00	2793.06	2610.58	182.48	79.07
JC-37		2.00	2788.35	2546.89	241.46	104.63
JC-38		2.00	2785.14	2601.86	183.28	79.42
JC-39		2.00	2779.70	2642.43	137.27	59.48
JC-40		2.00	3105.96	2741.39	364.57	157.98
JC-41		4.00	3091.90	2762.55	329.35	142.72
JC-44		2.00	3020.96	2636.96	384.00	166.40
JC-45		4.00	2990.14	2693.18	296.96	128.68
JC45A		0.00	2982.88	2740.00	242.88	105.25
JC-46		4.00	2973.45	2731.00	242.45	105.06
JC-47		0.00	2955.57	2675.00	280.57	121.58
JC-48		0.00	2934.27	2628.00	306.27	132.72
JC-49		2.00	2924.95	2570.00	354.95	153.81
JC-5		4.00	2760.88	2664.67	96.21	41.69
JC-50		4.00	2920.37	2571.75	348.62	151.07
JC-51		4.00	2879.14	2542.98	336.15	145.67
JC-52		5.00	2749.84	2450.98	298.86	129.51
JC-53		4.00	2859.02	2534.62	324.40	140.57
JC-54		2.00	2849.90	2536.82	313.08	135.67
JC-54A		300.00	2712.78	2430.15	282.62	122.47
JC-55		2.00	2829.37	2499.06	330.30	143.13
JC-56		2.00	2801.36	2476.79	324.57	140.65
JC-57		2.00	2786.63	2451.93	334.70	145.04

JC-59		4.00	2756.04	2443.90	312.14	135.26
JC-6		2.00	2765.97	2585.59	180.38	78.17
JC-7		2.00	2772.60	2671.17	101.44	43.96
JC-7A		2.00	2781.51	2661.16	120.35	52.15
JC-8		2.00	2783.72	2683.40	100.32	43.47
JC-9		2.00	2790.47	2529.80	260.68	112.96
JCO-10		2.00	2931.84	2717.32	214.53	92.96
JCO-12		5.00	2828.56	2601.04	227.52	98.59
JCO-13		2.00	2820.45	2616.00	204.45	88.60
JCO-14		2.00	2813.43	2636.00	177.43	76.89
JCO-15		2.00	2807.04	2658.47	148.57	64.38
JCO-16		2.00	2771.51	2770.00	1.51	0.65
JCO-2		2.00	3099.56	2741.00	358.56	155.38
JCO-3		4.00	3099.90	2761.73	338.17	146.54
JCO-4		4.00	3101.03	2776.00	325.03	140.85
JCO-5		4.00	3105.89	2892.00	213.89	92.69
JCO-6		2.00	3108.99	2957.83	151.16	65.50
JCO-7		4.00	3111.54	2986.31	125.24	54.27
JCO-9		2.00	2958.03	2752.84	205.20	88.92
JD-1		0.00	2729.19	2685.47	43.73	18.95
JD-1Ann		0.00	2730.31	2623.74	106.57	46.18
JD-2	Well Capacit	250.00	2729.02	2606.03	122.99	53.30
JD-3		0.00	2729.24	2580.00	149.24	64.67
JD-4		0.00	2730.44	2669.89	60.55	26.24
JG-1		0.00	3445.35	2881.58	563.77	244.30
JG-10		2.00	3446.90	2950.00	496.90	215.32
JG-11		2.00	3447.16	3200.00	247.16	107.10
JG-13		4.00	3151.34	2980.00	171.34	74.25
JG-14	Brusett Chur	2.00	3152.20	3012.91	139.29	60.36
JG-2		2.00	3445.35	2997.85	447.49	193.91
JG-3		10.00	3445.35	3194.46	250.90	108.72
JG-4		2.00	3445.73	3150.00	295.73	128.15
JG-5		0.00	3445.82	3100.00	345.82	149.86
JG-7		2.00	3446.55	3099.01	347.54	150.60
JG-8		0.00	3446.80	2980.00	466.80	202.28
JH-1		2.00	2828.76	2281.99	546.77	236.93
JH-11		2.00	3232.05	2797.68	434.37	188.23
JH-12		2.00	3232.24	2810.40	421.84	182.80
JH-13		2.00	3232.70	2774.00	458.70	198.77
JH-14		4.00	3233.16	2750.00	483.16	209.37
JH-149		2.00	3240.46	2658.00	582.46	252.40
JH-15		2.00	3233.45	2755.00	478.45	207.33
JH-16		2.00	3234.40	2833.13	401.26	173.88
JH-17		2.00	3235.88	2840.81	395.07	171.20
JH-18		2.00	3236.94	2774.00	462.94	200.61
JH-19		2.00	3241.82	2647.00	594.82	257.75
JH-2		2.00	2828.82	2268.94	559.88	242.61
JH-3		2.00	2829.26	2250.00	579.26	251.01
JH-8		6.00	3231.02	2938.06	292.96	126.95
JH-9		2.00	3231.30	2875.51	355.79	154.18
JL-1		2.00	2633.37	2418.80	214.57	92.98
JL-10		4.00	2639.56	2412.67	226.89	98.32
JL-11		4.00	2634.84	2393.00	241.84	104.80
JL-12		2.00	2629.38	2407.78	221.60	96.03
JL-13		4.00	2619.35	2392.40	226.95	98.35
JL-14		2.00	2613.61	2458.56	155.05	67.19
JL-15		4.00	2608.37	2423.95	184.42	79.91
JL-16		2.00	2607.73	2382.07	225.66	97.79
JL-2		2.00	2606.08	2425.10	180.98	78.43
JL-3		4.00	2590.35	2406.31	184.04	79.75
JL-35		0.00	2607.68	2362.42	245.26	106.28
JL-36		15.00	2607.67	2385.58	222.10	96.24
JL-3A		0.00	2587.14	2375.38	211.77	91.77
JL-4		0.00	2587.03	2354.65	232.38	100.70
JL-5		0.00	2578.70	2364.88	213.82	92.66
JL-6		2.00	2698.30	2506.35	191.95	83.18
JL-7		2.00	2671.93	2399.19	272.74	118.19
JL-8		2.00	2659.94	2365.47	294.46	127.60
JL-9		2.00	2657.90	2396.27	261.63	113.37
JN-1		2.00	2561.25	2273.66	287.59	124.62
JN-10		4.00	2797.95	2517.01	280.95	121.74
JN-11		2.00	2768.75	2518.68	250.07	108.37
JN-12		5.00	3002.51	2762.42	240.09	104.04
JN-14		2.00	2963.72	2640.00	323.72	140.28
JN-15		2.00	2953.25	2740.00	213.25	92.41
JN-16		2.00	2913.21	2572.00	341.21	147.86
JN-17		2.00	2906.49	2629.12	277.37	120.19
JN-19		4.00	2894.43	2605.00	289.43	125.42
JN-2		2.00	2561.25	2273.66	287.59	124.62
JN-20		2.00	2874.72	2500.00	374.72	162.38

JN-21	2.00	2863.07	2514.84	348.23	150.90
JN-22	2.00	2848.55	2495.42	353.13	153.02
JN-23	0.00	2819.73	2471.87	347.86	150.74
JN-24	2.00	2802.00	2425.95	376.05	162.95
JN-25	0.00	2712.78	2421.26	291.51	126.32
JN-3	2.00	2561.67	2377.74	183.93	79.70
JN-4	2.00	2869.44	2460.00	409.44	177.43
JN-5	4.00	2857.56	2485.16	372.41	161.38
JN-5A	2.00	2852.18	2503.00	349.18	151.31
JN-6	2.00	2839.67	2651.72	187.95	81.45
JN-7	4.00	2835.44	2536.46	298.98	129.56
JN-8	4.00	2826.78	2509.00	317.78	137.71
JN-9	2.00	2817.31	2507.00	310.31	134.47
JNC-4	4.00	2949.06	2646.24	302.83	131.22
JR-1	2.00	2498.32	2343.20	155.12	67.22
JR-10	2.00	2689.68	2351.01	338.67	146.76
JR-11	2.00	2687.18	2322.44	364.74	158.05
JR-12	2.00	2684.25	2154.07	530.17	229.74
JR-13	2.00	2682.07	2185.73	496.35	215.08
JR-14	2.00	2680.43	2140.59	539.84	233.93
JR-15	0.00	2679.11	2156.50	522.61	226.46
JR-16	0.00	2678.78	2158.93	519.85	225.27
JR-17	0.00	2677.63	2204.82	472.82	204.89
JR-18	0.00	2677.38	2212.72	464.65	201.35
JR-19	2.00	2676.03	2231.88	444.15	192.47
JR-2	2.00	2493.83	2312.17	181.66	78.72
JR-20	2.00	2673.81	2277.04	396.77	171.94
JR-21	0.00	2673.43	2284.00	389.43	168.75
JR-22	2.00	2673.08	2329.95	343.13	148.69
JR-23	2.00	2672.40	2406.73	265.67	115.12
JR-24	2.00	2671.88	2387.71	284.18	123.14
JR-28	0.00	2668.12	2477.45	190.67	82.62
JR-29	2.00	2667.26	2494.70	172.56	74.78
JR-3	2.00	2489.10	2279.63	209.46	90.77
JR-30	0.00	2666.38	2417.82	248.56	107.71
JR-31	0.00	2665.37	2398.50	266.87	115.64
JR-32	0.00	2664.65	2439.60	225.05	97.52
JR-33	0.00	2664.40	2480.76	183.64	79.58
JR-35	0.00	2662.72	2522.68	140.04	60.68
JR-36	2.00	2662.30	2480.30	182.00	78.87
JR-37	0.00	2661.57	2494.83	166.74	72.25
JR-38	0.00	2660.98	2458.33	202.65	87.81
JR-39	5.00	2660.61	2478.37	182.24	78.97
JR-4	2.00	2485.18	2255.89	229.29	99.36
JR-40	0.00	2660.49	2485.19	175.30	75.96
JR-41	2.00	2660.16	2485.88	174.28	75.52
JR-43	5.00	2659.64	2485.88	173.76	75.29
JR-5	2.00	2480.99	2246.64	234.35	101.55
JR-6	2.00	2472.45	2221.87	250.58	108.58
JR-7	2.00	2464.54	2234.60	229.94	99.64
JR-8	4.00	2462.69	2272.09	190.60	82.59
JR-9	2.00	2692.47	2456.75	235.72	102.14
JS-10	2.00	3270.15	2976.17	293.98	127.39
JS-11	2.00	3271.28	3042.00	229.28	99.36
JS-13	5.00	2932.19	2851.00	81.19	35.18
JS-14	4.00	2925.48	2773.60	151.88	65.82
JS-15	5.00	2917.29	2740.11	177.19	76.78
JS-16	2.00	2912.97	2772.00	140.97	61.09
JS-17	2.00	2883.29	2862.00	21.29	9.22
JS-18	2.00	2859.27	2860.59	-1.32	-0.57
JS-19	2.00	2855.96	2860.00	-4.04	-1.75
JS-2	2.00	3250.99	3134.00	116.99	50.70
JS-20	2.00	2821.85	2860.00	-38.15	-16.53
JS-21	4.00	2815.17	2813.00	2.17	0.94
JS-22	4.00	2768.27	2750.00	18.27	7.92
JS-23	2.00	2760.61	2740.00	20.61	8.93
JS-24	4.00	2732.87	2670.00	62.87	27.24
JS-3	2.00	3251.03	3140.00	111.03	48.11
JS-4	4.00	3251.16	3044.00	207.16	89.77
JS-5	6.00	3251.50	3000.00	251.50	108.99
JS-6	6.00	3254.11	3038.00	216.11	93.65
JS-7	2.00	3255.92	2850.00	405.92	175.90
JS-8	4.00	3262.83	2975.00	287.83	124.72
JS-9	2.00	3268.34	3048.23	220.11	95.38
JW-1	2.00	2716.68	2425.49	291.19	126.18
JW-10	2.00	2899.62	2593.89	305.73	132.48
JW-11	2.00	2883.97	2472.60	411.37	178.26
JW-12A	2.00	2858.32	2548.00	310.32	134.47
JW-13	4.00	2832.77	2498.11	334.66	145.02
JW-14	2.00	2813.15	2496.41	316.74	137.25

JW-15		2.00	2776.64	2394.01	382.63	165.81
JW-16		2.00	2751.55	2518.12	233.43	101.15
JW-17		2.00	2749.34	2516.51	232.83	100.89
JW-18		2.00	2707.02	2360.22	346.79	150.28
JW-19		2.00	2701.13	2380.00	321.13	139.15
JW-2		5.00	2717.66	2422.38	295.28	127.95
JW-20		2.00	2661.54	2366.59	294.95	127.81
W-21		5.00	2642.23	2445.93	196.31	85.07
JW-22		2.00	2622.95	2541.93	81.01	35.10
JW-24		2.00	2599.98	2407.00	192.98	83.63
JW-25		5.00	2594.47	2414.05	180.42	78.18
JW-27		2.00	2578.72	2405.78	172.94	74.94
JW-28		2.00	2562.29	2356.29	206.00	89.27
JW-29		2.00	2561.35	2369.34	192.01	83.20
JW-3		2.00	2681.80	2396.14	285.66	123.79
JW-31		4.00	2506.75	2395.45	111.30	48.23
JW-33		2.00	2667.09	2406.47	260.62	112.94
JW-34		4.00	2653.97	2477.25	176.71	76.58
JW-35		5.00	2632.23	2363.93	268.31	116.27
JW-36		2.00	2575.04	2298.98	276.06	119.62
JW-37		4.00	2557.27	2276.09	281.18	121.84
JW-38		2.00	2553.01	2231.22	321.79	139.44
JW-39		2.00	2547.31	2302.13	245.18	106.24
JW-40		2.00	2540.26	2256.97	283.29	122.76
JW-42		6.00	2290.31	2139.84	150.47	65.21
JW-43		5.00	2285.71	2054.53	231.18	100.18
JW-44		0.00	2608.99	2566.53	42.45	18.40
JW-6		2.00	2580.01	2421.59	158.42	68.65
JW-7		0.00	3015.87	2516.94	498.93	216.20
JW-8		2.00	2993.03	2397.88	595.15	257.90
JW-9		2.00	2932.83	2477.94	454.89	197.12
JW-9A		2.00	2923.63	2424.00	499.63	216.51
JWP-1	Wolf Point D	260.00	2239.69	1997.00	242.69	105.17
JWP-2		2.00	2246.70	1985.00	261.70	113.40
JWP-3		2.00	2250.30	1980.00	270.30	117.13
JWP-4		2.00	2257.66	1984.00	273.66	118.59
JWP-5	Air Port	2.00	2263.49	1985.00	278.49	120.68
JWP-6		2.00	2277.06	1980.00	297.06	128.73
JWP-7	L&C Campgrou	4.00	2280.22	1987.00	293.22	127.06
L[illegible]Bstr		0.00	2699.46	2524.00	175.46	76.03
[illegible]amp-1		0.00	3114.51	2452.00	662.51	287.09
R- 1		----	2250.00	2200.00	50.00	21.67
RchLmbBst1		0.00	2550.95	2477.00	73.95	32.04
RchLmbBst2		0.00	2693.86	2400.00	293.86	127.34
RV-1		0.00	3229.39	2750.00	479.39	207.74
RV-2	Wolf Point R	----	2296.73	2204.42	92.31	40.00
RV-3		0.00	2285.28	2058.00	227.28	98.49
RV-4		----	2797.62	2453.00	344.62	149.33
SndSprBstr		0.00	2954.80	2864.00	90.80	39.35
T- 1	WTP	----	2530.00	2510.00	20.00	8.67
T- 2		----	2514.00	2444.00	70.00	30.33
T- 3		----	2561.00	2406.21	154.79	67.08
T- 4		----	2747.00	2660.00	87.00	37.70
T- 5		----	2626.00	2540.00	86.00	37.27
T- 6		----	2723.00	2620.00	103.00	44.63
T- 7		----	2760.00	2452.65	307.35	133.18
T- 8		----	3151.00	3065.00	86.00	37.27
T- 9		----	2955.00	2864.00	91.00	39.43
T- 10		----	3060.00	2999.69	60.31	26.13
T- 11		----	2551.00	2477.00	74.00	32.07
T- 12		----	2500.00	2416.24	83.76	36.29
T- 13		----	2460.00	2400.04	59.96	25.98
T- 14		----	2643.00	2581.00	62.00	26.87
T- 15		----	2570.00	2524.45	45.55	19.74
T- 16		----	2762.00	2689.00	73.00	31.63
T- 17	Steve Forks	----	2937.00	2860.00	77.00	33.37
WolfPtBstr		0.00	2499.73	2416.00	83.73	36.28
WTP-HS		0.00	2947.75	2510.00	437.75	189.69
BlmfldBstr		0.00	2643.00	2581.00	62.00	26.87
BrsetBstr1		0.00	3251.22	2860.00	391.22	169.53
BrsetBstr2		0.00	3447.65	3065.00	382.65	165.82
Ca[illegible]SBSt		0.00	2513.57	2444.00	69.57	30.15
Ci[illegible]Bstr		0.00	2822.74	2540.00	282.74	122.52
CohagenBst		0.00	3059.77	3000.00	59.77	25.90
FloWelBstr		0.00	2761.51	2689.00	72.51	31.42
HelCrkBStr		0.00	3243.55	2620.00	623.55	270.21
HrseCrkBst		0.00	2542.01	2406.00	136.01	58.94
HrseCrkBst		0.00	2746.96	2660.00	86.96	37.68
Intake		0.00	2249.69	2300.00	-50.31	-21.80
LmbrtBstr		0.00	2569.75	2524.00	45.75	19.83

Pump-1	0.00	2759 98	2452.00	307.98	133 46
RchLmbBst1	0.00	3025 37	2477 00	548 37	237.63
RchLmbBst2	0 00	2459 99	2400 00	59 99	26.00
RV-1	----	2830.77	2750.00	80 77	35.00
RV-2	0.00	2529.32	2204.42	324.90	140 79
RV-3	----	2797 57	2058 00	739.57	320.48
RV-4	0.00	2947 07	2453 00	494 07	214.10
Sn Bstr	0.00	3282.15	2864 00	418 15	181.20
Woi__cBstr	0.00	2670.75	2416.00	254 75	110.39
WIP-HS	0 00	2529 89	2510.00	19.89	8 62

M A X I M U M   A N D   M I N I M U M   V A L U E S

P R E S S U R E S

JUNCIION NUMBER	MAXIMUM PRESSURES (psi)	JUNCIION NUMBER	MINIMUM PRESSURES (psi)
J-518	336.97	J-593	-897 92
J-532	320.94	J-594	-896 36
RV-3	320.48	J-171	-789.94
J- 40	318 72	J-585	-781 95
J-650	315.30	J-584	-781.31

V E L O C I I I E S

PIPE NUMBER	MAXIMUM VELOCITY (ft/s)	PIPE NUMBER	MINIMUM VELOCITY (ft/s)
P-474	17 31	P-694	0 02
P-374	14 76	P-537	0 02
P- 29	6.46	P-540	0.02
P-276	5.31	P-541	0.02
P-355	4.70	P-697	0.02

R E G U L A I I N G   V A L V E   R E P O R I

VALVE LABEL	VALVE IYPE	VALVE SETTING (psi or gpm)	VALVE STAIUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	35.00	ACTIVATED	207.74	35.00	6 00
RV-2	PRV-1	40.00	ACTIVAIED	140.79	40.00	298 00
RV-3	PRV-1	30 00	CLOSED	98.49	320.48	0 00
RV-4	PRV-1	30 00	CLOSED	214.10	149.33	0 00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INIO IHE SYSIEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
R- 1	339 88	
T- 1	1319.02	WIP
T- 2	-264.09	
T- 3	155 01	
I- 4	6 20	
T- 5	4.32	
T- 6	-310.00	
I- 7	0.51	
T- 8	-14 27	
T- 9	96 53	
I- 10	122.04	
I- 11	-201.42	
I- 12	90.79	
I- 13	1 74	
I- 14	-9 23	
T- 15	13.36	
I- 16	267.52	

I- 17 74 09 Steve Forks

```
NEI SYSIEM INFLOW  =   2491.01
NET SYSTEM OUTFLOW =   -799.01
NEI SYSIEM DEMAND  =   1692 00
```

***** HYDRAULIC ANALYSIS COMPLEIED *****

Inventory/Cost Summary

Pipe Type	Number	Total Length	Cost/Unit	Total Cost
PVC - 100 - 4	9	44187	7.74	342006.28
PVC - 100 - 6	3	10209	9.03	92190.62
PVC - 100 - 8	7	18651	11.33	211310.91
PVC - 100 - 10	12	58254	13.53	788172.35
PVC - 160 - 2.5	15	141164	7.51	1060139.46
PVC - 160 - 3	5	11152	7.65	85314.71
PVC - 160 - 4	122	473704	8.04	3808578.31
PVC - 160 - 5	2	15457	8.67	134008.61
PVC - 160 - 6	53	282725	9.24	2612378.04
PVC - 160 - 8	114	423989	10.79	4574842.97
PVC - 160 - 10	75	291510	12.88	3754644.96
PVC - 160 - 12	41	103216	15.09	1557530.51
PVC - 200 - 3	1	10478	7.78	81515.21
PVC - 200 - 4	15	53840	8.00	430716.33
PVC - 200 - 5	17	44403	9.05	401847.64
PVC - 200 - 8	23	83393	11.60	967356.91
PVC - 200 - 10	8	12425	18.37	228244.64
PVC - 200 - 12	11	48564	23.03	1118426.05
PVC - 250 - 1	196	1779810	4.00	7119239.91
PVC - 250 - 3	5	15083	7.98	120366.30
PVC - 250 - 4	14	56573	8.62	487663.37
PVC - 250 - 5	2	13301	9.45	125689.79
PVC - 250 - 6	5	11452	10.51	120360.50
PVC - 250 - 8	13	73716	12.97	956096.74
PVC - 250 - 12	8	43985	20.12	884975.14
Total	776	4121239	7.78	32063616.24

No fittings specified in system

Device Summary

726 junction nodes
17 tanks
1 resevervoirs
18 pumps
4 regulators
1935 intermediate nodes

DRY REDWATER COST ESTIMATE BASED ON 5//10/06 USER SIGNUPS

Description	Quantity	Unit	Unit Price	Total Price
1.5" PVC Class 100	78,652	LF	$ 4.42	$ 347,641.84
4" PVC Class 100	2,473	LF	$ 8.51	$ 21,000.00
5" PVC Class 100	0	LF	$ 9.40	$ -
6" PVC Class 100	121,971	LF	$ 10.00	$ 1,219,700.00
8" PVC Class 100	10,556	LF	$ 11.55	$ 121,900.00
10" PVC Class 100	58,267	LF	$ 13.56	$ 790,100.00
1.5" PVC Class 160	110,109	LF	$ 4.40	$ 484,500.00
2"PVC Class 160	34,931	LF	$ 8.18	$ 285,700.00
2.5" PVC Class 160	198,503	LF	$ 8.26	$ 1,639,600.00
3" PVC Class 160	109,325	LF	$ 8.42	$ 920,500.00
4" PVC Class 160	478,153	LF	$ 9.00	$ 4,303,400.00
5" PVC Class 160	15,492	LF	$ 9.54	$ 147,800.00
6" PVC Class 160	843,020	LF	$ 10.25	$ 8,641,000.00
8" PVC Class 160	389,290	LF	$ 11.87	$ 4,620,900.00
10" PVC Class 160	308,348	LF	$ 14.17	$ 4,369,300.00
12" PVC Class 160	102,474	LF	$ 18.00	$ 1,844,500.00
1.5" PVC Class 200	52,909	LF	$ 4.48	$ 237,000.00
2"PVC Class 200	89,548	LF	$ 8.15	$ 729,800.00
2.5"PVC Class 200	28,414	LF	$ 8.26	$ 234,700.00
3" PVC Class 200	33,300	LF	$ 8.56	$ 285,000.00
4" PVC Class 200	66,729	LF	$ 9.10	$ 607,200.00
5" PVC Class 200	44,416	LF	$ 9.20	$ 408,600.00
6" PVC Class 200	97,665	LF	$ 10.75	$ 1,049,900.00
8" PVC Class 200	65,659	LF	$ 12.76	$ 837,800.00
10" PVC Class 200	12,066	LF	$ 17.94	$ 216,500.00
12" PVC Class 200	49,530	LF	$ 22.20	$ 1,099,600.00
1"PVC Class 250	893,228	LF	$ 4.75	$ 4,242,800.00
1.5"PVC Class 250	336,125	LF	$ 7.40	$ 2,487,300.00
2"PVC Class 250	167,515	LF	$ 8.20	$ 1,373,600.00
2.5"PVC Class 250	365,089	LF	$ 8.26	$ 3,015,600.00
3" PVC Class 250	193,082	LF	$ 8.78	$ 1,695,300.00
4" PVC Class 250	144,057	LF	$ 9.48	$ 1,365,700.00
5" PVC Class 250	13,304	LF	$ 10.40	$ 138,400.00
6" PVC Class 250	213,518	LF	$ 12.00	$ 2,562,200.00
8" PVC Class 250	60,316	LF	$ 14.27	$ 860,700.00
10" PVC Class 250	7,334	LF	$ 20.21	$ 148,200.00
12" PVC Class 250	44,779	LF	$ 25.33	$ 1,134,300.00
Ductile iron fittings	600000	lbs	$ 1.50	$ 900,000.00
Service connections	910	Ea.	$ 2,000.00	$ 1,820,000.00
Surface Repair	1	LS	$ 700,000.00	$ 700,000.00
Storage Tanks In Line (20,000 Gal ave)	15	EA	$ 45,000.00	$ 675,000.00
WTP Storage Tank (1,000,000 Gal)	1	EA	$ 1,000,000.00	$ 1,000,000.00
Pump Stations	38	EA	$ 40,000.00	$ 1,520,000.00
Regulator Stations	5	EA	$ 50,000.00	$ 250,000.00
Mobilization	1	L.S.	$ 225,000.00	$ 225,000.00
Aggregrate Surfaces	1400	C.Y.	$ 20.00	$ 28,000.00
Unclassified Excavation	104,000	C.Y.	$ 3.00	$ 312,000.00
12" Inlet Piping	1080	L.F.	$ 30.00	$ 32,400.00

12" Gate Valve & Box	2	Each	$ 2,500.00	$ 5,000.00
Inlet Splash Pad	2	Each	$ 700.00	$ 1,400.00
Hydroburst System	1	Each	$ 25,000.00	$ 25,000.00
Intake Screens	2	Each	$ 10,000.00	$ 20,000.00
Intake Piping / Valves	1	L.S.	$ 50,000.00	$ 50,000.00
Coffer Dam	1	L.S.	$ 15,000.00	$ 15,000.00
Erosion Pads	2	Each	$ 5,000.00	$ 10,000.00
Riprap	330	C.Y.	$ 45.00	$ 14,900.00
Intake Sump	1	L.S.	$ 30,000.00	$ 30,000.00
Intake Building	1	L.S.	$ 25,000.00	$ 25,000.00
Sedimentations Pond Liner	196,000	S.F.	$ 0.90	$ 176,400.00
12" Outlet Piping	600	L.F.	$ 29.00	$ 17,400.00
12" Gate Valve & Box	2	Each	$ 2,500.00	$ 5,000.00
Transfer Sump	1	Each	$ 25,000.00	$ 25,000.00
Transfer Building	1	Each	$ 15,000.00	$ 15,000.00
Backwash Piping	650	L.F.	$ 20.00	$ 13,000.00
Backwash Overflow	1	L.S.	$ 1,800.00	$ 1,800.00
Backwash Outlet	1	L.S.	$ 5,000.00	$ 5,000.00
Pre- Engineered Building	1	L.S.	$ 150,000.00	$ 150,000.00
WTP - Building - General	1	L.S.	$ 135,000.00	$ 135,000.00
WTP - Building - Electrical	1	L.S.	$ 125,000.00	$ 125,000.00
WTP - Building - Mechanical	1	L.S.	$ 90,000.00	$ 90,000.00
Furnish Water Treatment Equipment	1	L.S.	$ 800,000.00	$ 800,000.00
Install Water Treatment Equipment	1	L.S.	$ 130,000.00	$ 130,000.00
Furnish & Install Chemical Feed Equipment	1	L.S.	$ 150,000.00	$ 150,000.00
Process Piping and Valves	1	L.S.	$ 120,000.00	$ 120,000.00
Intake Pumps	1	L.S.	$ 30,000.00	$ 30,000.00
Transfer Pumps	1	L.S.	$ 40,000.00	$ 40,000.00
Control System	1	L.S.	$ 250,000.00	$ 250,000.00
Electrical Service to Site	1	L.S.	$ 47,500.00	$ 47,500.00
Electrical Service on Site	1	L.S.	$ 5,000.00	$ 5,000.00
Septic Tank / Drainfield	1	L.S.	$ 4,000.00	$ 4,000.00
Laboratory Equipment	1	L.S.	$ 8,500.00	$ 8,500.00
Seeding	12	Acres	$ 1,500.00	$ 18,000.00
Fencing	5000	L.F.	$ 5.50	$ 27,500.00
Testing Laboratory Services	1	L.S.	$ 7,000.00	$ 7,000.00
Chemical Allowance	1	L.S.	$ 5,000.00	$ 5,000.00
Pilot Studies	1	L.S.	$ 85,000.00	$ 85,000.00
		Total Estimated Bid		$ 64,632,500.00
		Contingency		$ 6,463,300.00
		Total Estimated Construction		$ 71,095,800.00
		Engineering Design		$ 5,816,900.00
		Engineering Con. Admin		$ 4,524,300.00
		Legal/administartion		$ 711,000.00
		Estimated Project		$ 82,148,000.00

Appendix J

North Richland County / West Glendive Information

North Richland County Interest Summary to be used for future modeling

Name	Address	County	Twnp	Sec	Rge	Treat	Interest	House
Johnson, Jeff	33188 CR134 Sidney, MT	Richland	24	17	56	Y	Y	
Frideres, Darrell	2128 Greenough Dr. Missoula, MT 59802	Richland	26	24	56	Y		Y
Johnson, Jeff	33188 CR 134 Sidney, MT	Richland	24	17	56	Y	Y	Y
Sunny Slope Ranch, Inc.	Pasture Tap	Richland	23	9	56	Y	Y	
Hackley, Tom & Sandi	Fairview, MT	Richland	26	23	56	Y	Y	N
Hackley, Tom & Sandi	Fairview, MT	Richland	26	24	56	Y	N	Y
Hackley, Tom & Sandi	Fairview, MT	Richland	26	25	56	Y	?	?
Hackley, Tom & Sandi	Fairview, MT	Richland	26	26	56	Y	Y	
Frideres, Darrell	2128 Greenough Dr. Missoula, MT 59802	Richland	26	19	57	Y	Y	Y
Hackley, Rick	Fairview, MT	Richland	26	7	57	Y	Y	
Shannon, Richard	RR 2 Box 2494 Fairview, MT 59221	Richland	21	2	59	Y		Y
Shannon, Richard	Pasture Tap	Richland	26	35	59	Y		Y
Smokey River Ranch	Bonnie Berry Rt 2 Bx 2586 Fairview, MT	Richland	26	8	59	Y		Y
Smokey River Ranch	Bonnie Berry Rt 2 Bx 2586 Fairview, MT	Richland	26	21	59	Y		Y
Johnson, Jeff	33188 CR 134 Sidney, MT	Richland	24	17	56	Y		Y
Cavanaugh, Greg & Debbi	1052 14th St SW Sidney, MT 59270	Richland	24	17	56	Y		Y
Hungry Acres (Pete Prevost)	HCR 84 Box 5 Lambert, MT	Richland	24	17	56	Y		Y
Hunter, James & Rhonda	13988 Cnty Rd 347 Fairview, Mt 59221	Richland	24	17	56	Y		Y
McGinnis Ranch	"Hills" McGinnis	Richland	27N	33	56E	Y		
Schledewitz, Loren	Fairview, MT	Richland	26N	6	56E	Y	N	Y
Schledewitz, Loren	Fairview, MT	Richland	26N	7	56E	Y	N	Y
Traeger, Bob	Fairview, MT	Richland	26N	19	56E	Y	N	Y
Vitt, Jim & Steve	Fairview, MT	Richland	24N	36	56E	Y	N	Y
Herness, Don & Jill	Fairview, MT	Richland	26N	13	56E	Y	N	Y
Baue, Donald & Nancy	13781 Cty RD 340 Fairview, MT	Richland	29	25N	57E			
Baue, Donald & Nancy	13781 Cty RD 340 Fairview, MT	Richland	25N	20	57E			
Baue, Donald & Nancy	13781 Cty RD 340 Fairview, MT	Richland	24N	15	57E	Y	N	Y
Baue, Donald & Nancy	13781 Cty RD 340 Fairview, MT	Richland	25N	29	57E	Y	Y	
Baue, Donald & Nancy	13781 Cty RD 340 Fairview, MT	Richland	24N	11	57E	Y	Y	N
Baue, Nancy	Fairview, MT	Richland	25N	20	57E	Y	Y	Y
Burns, Randall & Robin	P.O. Box 733 Bigfork, MT 59911	Richland	25N	23	57E	Y		
Duda, Dennis & Janet	Fairview, MT	Richland	25N	13	57E	Y		
Johnson, Mary Jeane	Fairview, MT	Richland	25N	23	57E	Y	Y	
Kopp, Ron & Peggy	Rte 1 Box 1562 Fairview, MT 59221	Richland	25N	34	57E	Y		
Mahlum, Mark	Fairview, MT	Richland	26N	32	57E	Y		

McGinnis Ranch	14026 Cty Rd 342 Fairview, MT	Richland	25N	11	57E	Y		
McGinnis Ranch	14026 Cnty Rd 342 Fairview, MT	Richland	25N	12	57E	Y		
McGinnis Ranch	14026 Cnty Rd 342 Fairview, MT	Richland	25N	14	57E	Y		
McGinnis Ranch	14026 Cnty Rd 342 Fairview, MT	Richland	26N	5	57E	Y		
McGinnis Ranch	14026 Cnty Rd 342 Fairview, MT	Richland	26N	6	57E	Y	Y	Y
McGinnis Ranch	14026 Cnty Rd 342 Fairview, MT	Richland	26N	32	57E	Y	Y	N
McGinnis, Joe & Dan	Fairview, MT	Richland	25N	11	57E	Y	Y	Y
Sundheim, Jeff	14221 Cnty Rd 341 Fairview, MT 59221	Richland	26N	33	57E			
Tveit, Nolan	Fairview, MT	Richland	25N	23	57E	Y	Y	
Vitt, Jim & Loretta	14043 Cnty Rd 340 Fairview, MT 59221	Richland	25N	8	57E	Y	Y	Y
Vitt, Shari	14041 Cty Rd 340 Fairview, MT 59221	Richland	25N	8	57E	Y	Y	N
Vitt, Steven & Cynthia	Rte 1 Box 1520 Fairview, MT 59221	Richland	25N	17	57E	Y		Y
Wheeler, Becky	P.O. Box 85 Fairview, MT 59221	Richland	25N	29	57E	Y	Y	Y
Zoanni, Don & Jeanne	Fairview, MT	Richland	25N	32	57E	Y		
Berry, Wayne & Sherry	Fairview, MT	Richland	25N	31	58E	Y	Y	N
Berry, Wayne & Sherry	Fairview, MT	Richland	24N	9	58E			
Berry, Wayne & Sherry	Fairview, MT	Richland	24N	4	58E	Y	N	Y
Hovland, Kay	Fairview, MT	Richland	24N	4	58E	Y	N	Y
Hunter, James & Rhonda	13988 Cnty Rd 347 Fairview, Mt 59221	Richland	25N	24	58E	Y	Y	Y
Kittleson, Elroy	Fairview, MT	Richland	25N	3	58E	Y		
Skov, Glen & Anne	Fairview, MT	Richland	25N	21	58E	Y	Y	Y
Skov, Randy	Fairview, MT	Richland	25N	14	58E	Y	Y	Y
Swanson, Diane	Fairview, MT	Richland	24N	8	58E	Y	Y	Y
Tveit, Larry	Fairview, MT	Richland	25N	32	58E	Y	N	Y
Berry, John & Retta	Fairview, MT	Richland	26N	17	59E	Y	Y	Y
Berry, John & Retta	Fairview, MT	Richland	26N	20	59E	Y		
Bruer, Greg & Carol	Fairview, MT	Richland	26N	22	59E	Y		
Candee, Jarey	Fairview, MT	Richland	24N	26	59E			
Danielson, Muriel/Salsbury, J	13105 Hwy 200 Fairview, MT	Richland	24N	25	59E	Y	Y	
Danielson, Ronnie	RR 1 Box 1660 Fairview, MT	Richland	24N	25	59E	Y	Y	N
Dean, Robert	Fairview, MT	Richland	24N	23	59E	Y	N	Y
Dean, Robert	Fairview, MT	Richland	24N	24	59E	Y	N	Y
Hecker, Clint	Fairview, MT	Richland	26N	17	59E	Y	Y	Y
Jackson, Gary	Fairview, MT	Richland	24N	7	59E	Y	Y	Y
Kilen, Marvin	Fairview, MT	Richland	25N	18	59E	Y	Y	Y
Kjos, Gerard & Sylvia	Fairview, MT	Richland	25N	6	59E	Y	Y	Y
Linde, David	P.O. Box 91 Fairview, MT 59221	Richland	24N	17	59E	Y	Y	Y

Linde, Garfield & Madeline	Fairview, MT	Richland	24N	17	59E	Y	Y	Y
Marx, Joan & Raad, Blaine	Fairview, MT	Richland	25N	33	59E			
Neu, Tim	Fairview, MT	Richland	25N	12	59E	Y		
Norgaard, Mary/Geizer, Gale	Fairview, MT	Richland	24N	32	59E	Y		
Skov, Randy	Fairview, MT	Richland	25N	27	59E			
Skov, Randy	Fairview, MT	Richland	25N	28	59E	Y	N	Y
Sponheim, Lyle	Fairview, MT	Richland	26N	35	59E	Y	Y	Y
Sundheim, Orion	Fairview, MT	Richland	25N	31	59E	Y	Y	Y
Torgerson, Rocky	Fairview, MT	Richland	24N	33	59E	Y		
Umback, Randy	Fairview, MT	Richland	25N	8	59E	Y	Y	
Vitt, Dale	Fairview, MT	Richland	25N	16	59E	Y	Y	Y
Wheeler, Becky	P.O. Box 85 Fairview, MT 59221	Richland	25N	7	59E	Y	N	Y
Anderson, Dennis & Judy	Fairview, MT	Richland	24N	18	60E	Y	Y	N
Christianson, Roger	Fairview, MT 4-mile farm	Richland	25N	6	59E	Y	Y	Y
Hardy, Boyd & Shirley	Fairview, MT	Richland	24N	17	59E	Y		
Irigoin Thomas	HCR 84 Box 20A Lambert, MT 59243	Richland	24N	17	59E	Y	Y	
Lewis, William H	34134 Hwy 201 Fairview, MT	Richland	25N	33	59E	Y	N	Y
Sundheim, Jim & Sharon	35148 Hwy 201 Fairview, MT	Richland	25N	12	59E			

Estimate of Cost of a Pipeline to serve West Glendive

$2,532,500.00	
$ 75,000.00	Increase on Booster Station
$ 125,000.00	New Booster Station
$ 250,000.00	Storage Tank
$ 450,000.00	Service Line Allowance
$3,432,500.00	

Total Current Users That Could be Serviced

Highland Park	160
Forrest Park	330
Spring Grove	50
Whispering Trees	50
West Glendive	150
	740

Cost of Pipeline/Tank/Booster Per User @ 740 = $4,650.00

Total Cost with WTP Upsize , Surface Repair, Valves & Fittings, Engineering, Administration Cost = $5,286,000.00

Current Estimate	$61,834,600.00
Users	1,490
Cost/User	$41,500.00
New Estimate	$67,120,600.00
Users	2,230
Cost/User	$30,100.00

c.c M:/2004/S04-/080 McCone Co Conservation District/Pipeline Cost Glendive